

L Number	Hits	Search Text	DB	Time stamp
1	32	olive adj oil and press adj cake	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/09 09:05
2	15600	olive adj oil and solid	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/09 09:06
3	975	olive adj oil and solid and (polyphenolic or phenolic)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/09 09:07
4	664	olive adj oil and solid and (polyphenolic or phenolic) and @ay<1999	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/09 09:08
5	0	olive adj oil and olive adj2 solid and (polyphenolic or phenolic) and @ay<1999	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/09 09:08
6	13	olive adj oil and olive adj2 solid	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/09 09:17
7	11	olive adj oil and olive adj2 particle	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/09 09:26
8	19	olive adj oil and olive adj2 paste	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/09 09:26

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=> s olive(w)paste and (phenolics or phenolic)
 4223 OLIVE
 4584 PASTE
 65 OLIVE(W) PASTE
 884 PHENOLICS
 4036 PHENOLIC
 L1 5 OLIVE(W) PASTE AND (PHENOLICS OR PHENOLIC)

=> d l1 all 1-5

L1 ANSWER 1 OF 5 FSTA COPYRIGHT 2003 IFIS
 AN 2003:N0133 FSTA
 TI Influence of olive oil paste temperature on polyphenols content of the extracted oils.
 AU Parenti, A.; Spugnoli, P.
 CS Dipartimento di Ingegneria Agraria e Forestale, Univ. degli Studi di Firenze, Florence, Italy
 SO Rivista Italiana delle Sostanze Grasse, (2002), 79 (4) 97-100, 8 ref.
 ISSN: 0035-6808
 DT Journal
 LA Italian
 SL English
 AB Effect of temperature of olive oil extraction paste on the polyphenols content of the resultant oil was investigated. Paste from olives at different stages of maturity was extracted at 5°C intervals between 20 and 55°C, and the contents of total polyphenols and 8 different phenolic fractions were determined by UV-HPLC. Increasing paste temperature resulted in an almost linear increase in both the total polyphenols content and that of the fractions, particularly in the case of less mature (green) olive paste.

CC N (Fats, Oils and Margarine)
 CT EXTRACTION; OLIVE OILS; OLIVES; PASTES; POLYPHENOLS; TEMPERATURE; TEMP.

L1 ANSWER 2 OF 5 FSTA COPYRIGHT 2003 IFIS
 AN 2001(06):N0440 FSTA
 TI Improvement of **phenolic** compound content in virgin olive oils by using enzymes during malaxation.
 AU Garcia, A.; Brenes, M.; Moyano, M. J.; Alba, J.; Garcia, P.; Garrido, A.
 CS Correspondence (Reprint) address, A. Garrido, Food Biotech. Dep., Inst. de la Grasa, CSIC, Avda. Padre Garcia Tejero 4, 41012 Seville, Spain. Fax +34-954691262. E-mail garfer(a)cica.es
 SO Journal of Food Engineering, (2001), 48 (3) 189-194, 21 ref.
 ISSN: 0260-8774
 DT Journal
 LA English
 AB Use of enzymes to enhance yields during olive oil extraction may increase levels of certain phenols in the product. This study investigated the influence of commercial enzyme (Olivex + Novoferm and Olivex + Glucanex; Novo Nordisk, Switzerland) addition to olive pastes during extraction, upon the phenol composition of resulting virgin olive oils extracted from cv. Picual and Arbequina olives. Addition of enzymes to olive pastes before the malaxation stage resulted in higher levels of phenols in oils compared with those subjected to extraction without use of enzymes. Highest levels of phenols were observed in oils extracted from Arbequina olives. Enzyme treatment generally enhanced levels of orthodiphenols more than non-orthodiphenols. The positive effect of enzymes was accompanied by a lower peroxide index and higher Rancimat stability in oils. Levels of phenols in wash water from the vertical centrifuge used during oil extraction also increased when pastes were treated with enzymes. It is concluded that enzymic treatment of **olive paste** could have important implications for storage stability and nutritional quality of olive oils.

CC N (Fats, Oils and Margarine)
 CT ENZYMES; EXTRACTION; OLIVE OILS; PHENOLS

✓ L1 ANSWER 3 OF 5 FSTA COPYRIGHT 2003 IFIS
 AN 1998(09):N0436 FSTA
 TI The influence of **olive paste** preparation techniques on the quality of olive oil. II. Evolution of **phenolic** substances and of some quality parameters referred to the ripening of drupes in virgin olive oil from the Coratina cv.
 AU Alloggio, V.; Caponio, F.
 CS Istituto di Ind. Agrarie, Univ. degli Studi, Bari, Italy
 SO Rivista Italiana delle Sostanze Grasse, (1997), 74 (10) 443-447, 13 ref.
 ISSN: 0035-6808
 DT Journal
 LA Italian
 SL English
 AB In studies designed to reduce the bitter/pungent taste of oils extracted from Coratina cv. olives, samples were crushed either in a hammer mill or a stone mill. The hammer mill proved more effective in reducing the olives' **phenolic** contents (initially 436-628 mg/kg), although the extraction rate tended to decline (to 44-32%) as the drupes ripened. Nevertheless, the stone mill produced oils with oxidation stability comparable to that obtained with the hammer mill, and can be used to prepare oils from olives which give a bitter/pungent flavour. HPLC analysis of the **phenolic** compounds (which did not include oleuropein) revealed presence of an unknown peak showing good correlation ($r = 0.92$) with the induction time. [See V. Alloggio et al., Rivista Italiana delle Sostanze Grasse (1996) 73, 335-360 for part I.]

CC N (Fats, Oils and Margarine)
 CT COMMUNITION; FLAVOUR; OLIVE OILS; OLIVES; PHENOLS; RIPENING; BITTERNESS

L1 ANSWER 4 OF 5 FSTA COPYRIGHT 2003 IFIS
 AN 1997(08):N0024 FSTA
 TI Effects of talc addition and operating mode on the quality and oxidative stability of virgin olive oils obtained by centrifugation.
 AU Cert, A.; Alba, J.; Leon-Camacho, M.; Moreda, W.; Perez-Camino, M. C.
 CS Inst. de la Grasa, Avda. Padre Garcia Tejero 4, E-41012 Seville, Spain.
 Fax 34-5-461.67.90
 SO Journal of Agricultural and Food Chemistry, (1996), 44 (12) 3930-3934, 12 ref.
 ISSN: 0021-8561
 DT Journal
 LA English
 AB Continuous centrifugation, a widely used procedure for extraction of virgin olive oil, involves crushing olives, mixing the **olive paste**, and centrifugation with or without water addition ('three phase' or 'two phase' modes, respectively). Virgin olive oils were obtained following both procedures, with and without talc addition. Acidity value, peroxide index, UV absorption at 270 and 232 nm, glyceridic polar compounds, oxidized triglycerides, diglycerides, iron, copper, tocopherols, **phenolic** compounds, and oxidative stability were determined and the results statistically analyzed. The talc addition gave rise to a small increase in the oil stability and a slight decrease in oxidized triglyceride levels. The oils obtained by the 'two phase' mode showed a greater concentration of **phenolic** compounds than the homologous oils obtained by the 'three phase' mode. Oils processed by the 'three phase' mode showed a significant correlation between their stability and their **phenolic** concentration.
 CC N (Fats, Oils and Margarine)
 CT EXTRACTION; OILS; OLIVE OILS; PHYSICAL PROPERTIES; PROCESSING; VEGETABLE PRODUCTS; PHYSICOCHEMICAL PROPERTIES

L1 ANSWER 5 OF 5 FSTA COPYRIGHT 2003 IFIS
 AN 1975(06):N0262 FSTA
 TI [Addition of enzymes and **phenolic** tannin adsorbents to olive pastes used for single pressure or percolation oil extraction. I. Effects on oil yields and some operating variables.]
 AU Montedoro, G.; Petruccioli, G.
 CS Istituto di Ind. Agrarie, Univ. di Perugia, Italy
 SO Rivista Italiana delle Sostanze Grasse, (1974), 51 (10) 378-385, 29 ref.
 DT Journal
 LA Italian
 SL English
 AB Effects of adding enzyme preparations (cellulase, hemicellulase, pectinase, protease, acid protease) and/or **phenolic** tannin adsorbing agents (Polyclar AT, methylcellulose, egg albumin) during crushing of olives on oil yield and on optimum time of crushing, time and temperature of working and water content of **olive paste** were investigated for 2 industrial oil extraction systems: (i) single pressure, and (ii) percolation with pressure. In laboratory tests, addition of cellulase + pectinase produced 10% increase in yield, rising to 16-17% when combined with adsorbent. In (i) and (ii), oil yield and extraction times were improved by both types of additives. In (i), addition of enzymes allowed a 50% reduction in total processing time with 20 min crushing, 60 min working at 35°C and 30% moisture content. Addition of 20% whole olive stones improved oil extraction rate to 88% of total oil (99% extractable oil) after 40 min, vs. 75 and 87% without stones and 51 and 86% without stones or enzyme treatment. Total oil yield was 24.96%. In (ii), total extraction time was reduced 20-25% by addition of enzymes, to 20 min crushing and 60 min working at 35°C and 30% moisture content for best results (total oil yield 24.92%). The analytical results obtained for oils allowed their classification as virgin oils.
 CC N (Fats, Oils and Margarine)
 CT ENZYMES; EXTRACTION; OLIVE OILS; ENZYME PREPARATIONS

=> s olive and (paste or solid or solids or particle or particles)
4223 OLIVE
4584 PASTE
10885 SOLID
13336 SOLIDS
5500 PARTICLE
6986 PARTICLES
L2 320 OLIVE AND (PASTE OR SOLID OR SOLIDS OR PARTICLE OR PARTICLES)

=> s l2 and (polyphenolic or phenolic or phenolics)
452 POLYPHENOLIC
4036 PHENOLIC
884 PHENOLICS
L3 21 L2 AND (POLYPHENOLIC OR PHENOLIC OR PHENOLICS)

=> d l3 all 1-21

L3 ANSWER 1 OF 21 FSTA COPYRIGHT 2003 IFIS
AN 2003:N0133 FSTA
TI Influence of **olive** oil **paste** temperature on
polyphenols content of the extracted oils.
AU Parenti, A.; Spugnoli, P.
CS Dipartimento di Ingegneria Agraria e Forestale, Univ. degli Studi di
Firenze, Florence, Italy
SO Rivista Italiana delle Sostanze Grasse, (2002), 79 (4) 97-100, 8 ref.
ISSN: 0035-6808
DT Journal
LA Italian
SL English
AB Effect of temperature of **olive** oil extraction **paste** on the
polyphenols content of the resultant oil was investigated. **Paste**
from olives at different stages of maturity was extracted at 5°C
intervals between 20 and 55°C, and the contents of total
polyphenols and 8 different **phenolic** fractions were determined
by UV-HPLC. Increasing **paste** temperature resulted in an almost linear
increase in both the total polyphenols content and that of the fractions,
particularly in the case of less mature (green) **olive**
paste.
CC N (Fats, Oils and Margarine)
CT EXTRACTION; **OLIVE OILS**; OLIVES; PASTES; POLYPHENOLS;
TEMPERATURE; TEMP.

L3 ANSWER 2 OF 21 FSTA COPYRIGHT 2003 IFIS
AN 2003:N0097 FSTA
TI **Phenolic** compounds profile of Cornicabra virgin **olive**
oil.
AU Gomez-Alonso, S.; Desamparados-Salvador, M.; Fregapane, G.
CS Correspondence (Reprint) address, G. Fregapane, Dep. de Quimica Analitica
y Tec. de Alimentos, Fac. de Quimicas, Univ. de Castilla - La Mancha,
13071 Ciudad Real, Spain. Tel. +34 926 295300. Fax +34 926 295318.
E-mail giuseppe.fregapane(a)uclm.es
SO Journal of Agricultural and Food Chemistry, (2002), 50 (23) 6812-6817, 35
ref.
ISSN: 0021-8561
DT Journal
LA English
AB The phenol profiles of commercial Cornicabra var. virgin **olive**
oils from 5 successive crop seasons (1995/1996 to 1999/2000; n = 97) were
determined by **solid** phase extraction (SPE) RP-HPLC, and their
relationship with oxidative stability, extraction conditions and a
preliminary study on variety classification is discussed. The median of

the total phenols content was 38 ppm (as syringic acid), although a wide range was observed from 11-76 ppm. The main phenols found were the dialdehydic form of elenolic acid linked to tyrosol (p-HPEA-EDA; 9 ± 7 ppm, as median and interquartile range), oleuropein aglycon (8 ± 6 ppm) and the dialdehydic form of elenolic acid linked to hydroxytyrosol (3,4-DHPEA-EDA; 5 ± 8 ppm). In many cases, the correlation with oxidative stability was higher when the sum of 3,4-DHPEA-EDA and oleuropein aglycon ($r.s.p.2 = 0.91-0.96$) or the sum of these 2 and hydroxytyrosol ($r.s.p.2 = 0.90-0.97$) was considered than was observed with HPLC total phenols ($r.s.p.2 = 0.91-0.95$), and especially with colorimetric determination of total polyphenols and o-diphenols ($r.s.p.2 = 0.77-0.95$ and $0.78-0.92$, respectively). 3,4-DHPEA-EDA, p-HPEA-EDA, the aglycons of oleuropein and ligstroside, and HPLC total phenols content presented highly significant differences ($P = 0.001-0.010$) with respect to the dual- and triple-phase extraction systems used, whereas colorimetric total polyphenols content did not ($P = 0.348$), and o-diphenols showed a much lower significant difference ($P = 0.031$). The 5 variables that most satisfactorily classified the principal commercial Spanish virgin **olive** oil varieties were 1-acetoxypinoresinol, 4-(acetoxylethyl)-1,2-dihydroxybenzene (3,4-DHPEA-AC), ligstroside aglycon, p-HPEA-EDA and RT 43.3 contents.

CC N (Fats, Oils and Margarine)

CT CLASSIFICATION; EXTRACTION; **OLIVE OILS**; OXIDATION; PHENOLS;
OXIDATIVE STABILITY

L3 ANSWER 3 OF 21 FSTA COPYRIGHT 2003 IFIS

AN 2002:N0511 FSTA

TI Improved sample extraction and clean-up for the GC-MS determination of BADGE and BFDGE in vegetable oil.

AU Brede, C.; Skjevrak, I.; Herikstad, H.; Anensen, E.; Austvoll, R.; Hemmingsen, T.

CS Naeringsmiddeltilsynet for Midt-Rogaland, Forusbeen 3, N-4033 Stavanger, Norway. E-mail cato.brede(a)nmt-mrog.rl.no

SO Food Additives and Contaminants, (2002), 19 (5) 483-491, 19 ref.
ISSN: 0265-203X

DT Journal

LA English

AB A method was developed for the determination of migration contaminants in **olive** oil, with a special focus on the 2 can-coating migration compounds, bisphenol A diglycidyl ether (BADGE) and bisphenol F diglycidyl ether (BFDGE). The preferred sample preparation was a single liquid-liquid extraction of compounds from the oil into 20% (v/v) methanol in acetonitrile, followed by clean-up with **solid-phase** extraction on aminopropyl bonded to silica. This purification procedure selectively removed all free fatty acids from the extracts without removing **phenolic** compounds of interest. The **solid**-phase extraction columns were used many times by implementing a procedure of washing out the strongly retained fatty acids with 2% acetic acid in methanol. GC coupled with full scan (m/z 33-700) electron ionization MS was used for the determination of several model compounds in **olive** oil samples. BADGE and BFDGE could be determined in the 0.05-2 mg kg.sup.-.sup.1 range in oil samples with a relative s.d. of <6% (6 replicates). The method was used in an enforcement campaign for the Norwegian Food Control Authority to analyse vegetable oil samples from canned fish-in-oil.

CC N (Fats, Oils and Margarine)

CT ANALYTICAL TECHNIQUES; CANNED FOODS; ETHERS; FOOD SAFETY PLANT FOODS;
MIGRATION; **OLIVE OILS**; PHENOLS; BISPHENOL A DIGLYCIDYL ETHER;
SOLID PHASE EXTRACTION

L3 ANSWER 4 OF 21 FSTA COPYRIGHT 2003 IFIS

AN 2002:N0116 FSTA

TI Simple **phenolic** content in **olive** oil residues as a

function of extraction systems.

AU Lesage-Meessen, L.; Navarro, D.; Maunier, S.; Sigoillot, J. C.; Lorquin, J.; Delattre, M.; Simon, J. L.; Asther, M.; Labat, M.

CS Unite INRA de Biotech. des Champignons Filamenteux, IFR de Biotech. Agro-Ind. de Marseille, Univ. de Provence et de la Mediterranee, ESIL, CP 925, 13288 Marseille Cedex 09, France. Tel. +33-4-91-82-86-08. Fax +33-4-91-82-86-01. E-mail lesage(a)esil.univ-mrs.fr

SO Food Chemistry, (2001), 75 (4) 501-507, 30 ref.

ISSN: 0308-8146

DT Journal

LA English

AB Effects of the classical 3-phase vs. a 2-phase centrifugation system on phenols of **olive** oil residues were examined, during the 1999-2000 season in France. The 2-phase system uses a horizontal decanter and produces a wet **solid** residue of **olive** pulp and husk. Fresh residues from the 3-phase system were stabilized with ethanol to a final concentration of 30%, and clarified by filtration and centrifugation. Residues from the 2-phase system were diluted with water, stabilized as before, homogenized and clarified by hydraulic pressing. Clarified residues were analysed for pH and DM, and for **phenolic** compounds (HPLC); antiradical activity of phenols was also analysed. The 3-phase system residue contained 30.4 g DM/l, a total phenol content of 24% of dry residue and had a pH of 5.7; corresponding values for residue from the 2-phase system were 62.7 g DM/l, 20.4% dry residue as phenols and pH of 5.7. Ethyl acetate was used to extract phenols before HPLC. Both **phenolic** extracts showed similar chromatographic profiles. Hydroxytyrosol and p-tyrosol were the major compounds detected, values in the 2-phase extract being 1.4x those in the 3-phase extract. Concentration of vanillin and various **phenolic** acids (caffeic, p-coumaric, ferulic, vanillic) were 2-30 mg/100 g dry residue, depending on molecule and type of system. To partially characterize the structure of **phenolic** compounds recovered by ethyl acetate extraction, alkaline hydrolysis was performed. While no variation was observed in the concentration of hydroxytyrosol recovered after alkaline hydrolysis, release of tyrosol, p-coumaric acid and caffeic acid was observed. This suggests that esterified linkages occurred with most simple **phenolic** molecules, except for hydroxytyrosol, which is supposed to be readily released during extraction. Extracts were tested for antioxidative activity by the stable free radical DPPH test. The 2-phase extract exhibited the highest antiradical activity (twice that of the 3-phase extract), probably because of its higher concentration of antioxidant phenols. Thus, certain **olive** oil residues may be a commercially viable source of **phenolic** antioxidants.

CC N (Fats, Oils and Margarine)

CT ANTIOXIDANTS; CENTRIFUGATION; **OLIVE OILS**; OXIDATION; PHENOLS; RESIDUES; ANTIOXIDATIVE ACTIVITY; TYROSOL

L3 ANSWER 5 OF 21 FSTA COPYRIGHT 2003 IFIS

AN 2002:N0051 FSTA

TI Characterization and lime treatment of **olive** mill wastewater.

AU Aktas, E. S.; Imre, S.; Ersoy, L.

CS Correspondence (Reprint) address, L. Ersoy, Dep. of Analytical Chem., Fac. of Pharmacy, Istanbul Univ., 34452 Beyazit-Istanbul, Turkey. Fax +90-2125190812. E-mail lersoy(a)hotmail.com

SO Water Research, (2001), 35 (9) 2336-2340, 18 ref.

ISSN: 0043-1354

DT Journal

LA English

AB Use of lime (calcium oxide) as a pretreatment to reduce levels of pollutants in **olive** oil mills effluents was investigated. Effluent samples were analysed for concentration of total, fixed, volatile and suspended **solids**, chemical O.sub.2 demand, oil grease, polyphenols, volatile phenols, N and reducing sugars before and after

treatment with lime (addition of lime until a pH of 12 was reached in the effluent mixture). Lime treatment reduced levels of all investigated pollutants by 63-95%, with the exception of volatile phenols (average reduction, 28%). Additional experiments conducted on phenol mixtures revealed that adsorption efficiency on lime varied widely according to compound structure; compounds with 2 **phenolic** groups in the middle (e.g. catechin) were adsorbed completely, compounds containing both **phenolic** and carboxyl groups (e.g. vanillic acid) were adsorbed partially, while compounds having only one **phenolic** or carboxyl group (e.g. veratric acid) were not adsorbed at all. More efficient filtration of lime-treated effluents compared with untreated effluents was observed. It is concluded that lime treatment is an effective, low cost means of reducing pollutants in **olive** oil mills effluents.

CC N (Fats, Oils and Margarine)

CT CONTAMINATION; **OLIVE OILS**; PROCESSING; WASTE WATER; CALCIUM OXIDE; **OLIVE OIL MILLS EFFLUENTS**; POLLUTANTS

L3 ANSWER 6 OF 21 FSTA COPYRIGHT 2003 IFIS

AN 2002:J2286 FSTA

TI Development and evaluation of an HPLC/DAD method for the analysis of **phenolic** compounds from **olive** fruits.

AU Vinha, A. F.; Silva, B. M.; Andrade, P. B.; Seabra, R. M.; Pereira, J. A.; Oliveira, M. B.

CS Correspondence (Reprint) address, P. B. Andrade, Servico de Farmacognosia, Fac. de Farmacia, Univ. do Porto, 4050-047 Porto, Portugal. E-mail pandrade(a)ff.up.pt

SO Journal of Liquid Chromatography & Related Technologies, (2002), 25 (1) 151-160, 10 ref.
ISSN: 1082-6076

DT Journal

LA English

AB A new HPLC method incorporating diode array detection for separation of 9 phenols is described. This methodology was applied to qualitative and quantitative analyses of phenols in the Portuguese **olive** cv. Cobrancosa, Madural and Verdeal. 2 extraction methods were needed for a complete analysis, 1 of which included use of a Sep-pack C18 cleaning step. Chromatographic separation of phenols was achieved using a column packed with Spherisorb ODS2 (25.0 x 0.46 cm; 5 µm, **particle** size). The solvent system used was a gradient of water-formic acid (19:1) and methanol, with a flow rate of 0.9 ml/min. Detection limits for phenols were between 0.04 and 4.32 µg/ml and the method was precise. As a general rule, recovery values were high. It is suggested that this technique may be used for discrimination of Portuguese **olive** cultivars.

CC J (Fruits, Vegetables and Nuts)

CT HIGH PERFORMANCE LIQUID CHROMATOGRAPHY; OLIVES; PHENOLS; CV; HPLC

L3 ANSWER 7 OF 21 FSTA COPYRIGHT 2003 IFIS

AN 2001(12):N0903 FSTA

TI High-performance liquid chromatography evaluation of phenols in virgin **olive** oil during extraction at laboratory and industrial scale.

AU Garcia, A.; Brenes, M.; Martinez, F.; Alba, J.; Garcia, P.; Garrido, A.

CS Correspondence (Reprint) address, A. Garrido, Food Biotech. Dep., Inst. de la Grasa (CSIC), Avda. Padre Garcia Tejero 4, Seville, Spain. E-mail garfer(a)cica.es

SO Journal of the American Oil Chemists' Society, (2001), 78 (6) 625-629, 20 ref.
ISSN: 0003-021X

DT Journal

LA English

AB **Phenolic** compounds are of fundamental importance to the quality and nutritional properties of virgin **olive** oils. HPLC analysis of simple and complex **olive** oil phenols in the streams generated

in the 2-phase extraction system was carried out using Arbequina and Picual olives. The malaxation stage reduced the concentration of orthodiphenols in oil by approx. 50-70%, while the concentration of the nonorthodiphenols remained constant, particularly levels of the recently identified lignans 1-acetoxypinoresinol and pinoresinol. Oxidation of orthodiphenols on a laboratory scale was avoided by malaxing the **paste** under a nitrogen atmosphere. **Phenolic** compounds in the wash water used in the vertical centrifuge were also identified. Hydroxytyrosol, tyrosol, and the dialdehydic form of elenolic acid linked to hydroxytyrosol were the most representative phenols in these waters. Hence, **phenolic** compounds in the wash waters came from both the aqueous and lipid phases of the decanter oily must.

CC N (Fats, Oils and Margarine)

CT EXTRACTION; **OLIVE OILS**; PHENOLS

L3 ANSWER 8 OF 21 FSTA COPYRIGHT 2003 IFIS

AN 2001(07):N0526 FSTA

TI Effect of enzyme treatment during mechanical extraction of **olive** oil on **phenolic** compounds and polysaccharides.

AU Vierhuis, E.; Servili, M.; Baldioli, M.; Schols, H. A.; Voragen, A. G. J.; Montedoro, G. F.

CS Correspondence (Reprint) address, G. F. Montedoro, Dipartimento di Sci. degli Alimenti, Univ. of Perugia, 06126 Perugia, Italy. Fax +39 75 585 7916. E-mail montegia(a)unipg.it

SO Journal of Agricultural and Food Chemistry, (2001), 49 (3) 1218-1223, 38 ref.

ISSN: 0021-8561

DT Journal

LA English

AB Effects of using cell wall degrading enzyme preparations during mechanical extraction of virgin **olive** oil on contents of phenols and polysaccharides was investigated. Use of the enzyme preparations increased the concentration of **phenolic** compounds in the **paste**, oil and by-products. In particular, contents of secoiridoid derivatives such as the dialdehydic form of elenolic acid linked to 3,4-dihydroxyphenylethanol (3,4-DHPEA-EDA) and an isomer of oleuropein aglycon (3,4-DHPEA-EA), which have high antioxidant activities, increased significantly in the **olive** oil. Furthermore, the use of an N.sub.2 flush during processing strongly increased the **phenolic** concentration. Analyses of the pectic polymers present in the **paste** showed that the use of pectinolytic enzyme preparations increased the yield of the buffer soluble pectins and the proportion of molecules with a lower mol. weight. In addition, the content of uronic acids in the buffer soluble extract increased considerably due to use of the enzyme preparations. Analysis of the polymeric carbohydrates in the vegetation waters showed the presence of mainly pectic polymers. Addition of commercial enzyme preparations increased the uronic acid content of the polysaccharides in the vegetation water substantially compared to the control. It is concluded that addition of cell wall degradation enzymes improves **olive** oil quality, however, the mechanisms responsible remain unclear.

CC N (Fats, Oils and Margarine)

CT ENZYMES; **OLIVE OILS**; PHENOLS; POLYSACCHARIDES; QUALITY

L3 ANSWER 9 OF 21 FSTA COPYRIGHT 2003 IFIS

AN 2001(06):N0488 FSTA

TI **Solid-phase** extraction and gas chromatographic analysis of **phenolic** compounds in virgin **olive** oil.

AU Liberatore, L.; Procida, G.; Alessandro, N. d'; Cichelli, A.; D'Alessandro, N.

CS Correspondence (Reprint) address, A. Cichelli, Dipartimento di Sci., Univ. G. D'Annunzio di Chieti e Pescara, I-66127 Pescara, Italy. Tel.

+39-085-4537509. Fax +39-085-4537545. E-mail cichelli(a)sci.unich.it
 SO Food Chemistry, (2001), 73 (1) 119-124, 29 ref.
 ISSN: 0308-8146
 DT Journal
 LA English
 AB The efficiency of **solid**-phase extraction (SPE) was compared with that of liquid-liquid extraction for GC-FID and GC-MS analysis of phenols in **olive** oil. 2 commercial **solid** supports, octadecyl (C18) and octadecyl end capped (C18EC), were evaluated. 10 virgin **olive** oil samples from the Abruzzo region of Italy (3 from Dritta, 3 from Gentile and 4 from Leccino var.) were analysed; a refined sample of oil was obtained from an industrial plant in Pescara, Italy. SPE could be used for extraction and quantification of phenols, as both the trapping and later release of analytes from C18 phases was highly competitive with liquid-liquid extraction. Discrimination between C18 and C18EC phases was not as great as expected, with the former giving higher values for **phenolic** compounds. Difficulties in obtaining pure samples of aglycones using liquid-liquid extraction demonstrate further advantages of using SPE for analysing phenols in **olive** oil.
 CC N (Fats, Oils and Margarine)
 CT ANALYTICAL TECHNIQUES; EXTRACTION; GAS CHROMATOGRAPHY; **OLIVE OILS**; **PHENOLS**; GC; **SOLID PHASE EXTRACTION**

L3 ANSWER 10 OF 21 FSTA COPYRIGHT 2003 IFIS
 AN 2001(06):N0440 FSTA
 TI Improvement of **phenolic** compound content in virgin **olive** oils by using enzymes during malaxation.
 AU Garcia, A.; Brenes, M.; Moyano, M. J.; Alba, J.; Garcia, P.; Garrido, A.
 CS Correspondence (Reprint) address, A. Garrido, Food Biotech. Dep., Inst. de la Grasa, CSIC, Avda. Padre Garcia Tejero 4, 41012 Seville, Spain. Fax +34-954691262. E-mail garfer(a)cica.es
 SO Journal of Food Engineering, (2001), 48 (3) 189-194, 21 ref.
 ISSN: 0260-8774
 DT Journal
 LA English
 AB Use of enzymes to enhance yields during **olive** oil extraction may increase levels of certain phenols in the product. This study investigated the influence of commercial enzyme (Olivex + Novoferm and Olivex + Glucanex; Novo Nordisk, Switzerland) addition to **olive** pastes during extraction, upon the phenol composition of resulting virgin **olive** oils extracted from cv. Picual and Arbequina olives. Addition of enzymes to **olive** pastes before the malaxation stage resulted in higher levels of phenols in oils compared with those subjected to extraction without use of enzymes. Highest levels of phenols were observed in oils extracted from Arbequina olives. Enzyme treatment generally enhanced levels of orthodiphenols more than non-orthodiphenols. The positive effect of enzymes was accompanied by a lower peroxide index and higher Rancimat stability in oils. Levels of phenols in wash water from the vertical centrifuge used during oil extraction also increased when pastes were treated with enzymes. It is concluded that enzymic treatment of **olive paste** could have important implications for storage stability and nutritional quality of **olive** oils.
 CC N (Fats, Oils and Margarine)
 CT ENZYMES; EXTRACTION; **OLIVE OILS**; **PHENOLS**

L3 ANSWER 11 OF 21 FSTA COPYRIGHT 2003 IFIS
 AN 2001(01):J0156 FSTA
 TI Sample preparation in the determination of **phenolic** compounds in fruits.
 AU Antolovich M.; Prenzler, P.; Robards, K.; Ryan, D.
 CS Correspondence (Reprint) address, K. Robards, Sch. of Sci. & Tech., Locked Bag 588, Wagga Wagga, NSW 2678, Australia

SO Analyst, (2000), 125 (5) 989-1009, 237 ref.
 ISSN: 0003-2654
 DT General Review
 LA English
 AB Methods for determining levels of phenols in fruits, fruit juices and related products are reviewed with emphasis on sample preparation methods. Aspects covered include: extraction methods available for sample preparation (including **solid**-phase microextraction, enzymic treatments); use of hydrolysis in extraction processes (as an aid to structural elucidation and characterization of glycosides, and for analysis of **phenolic** acids in citrus fruits and fruit juices); extraction of phenols from fruit extracts (juices and related products (fruit purees, red wines), **olive** oil, by-products of fruit processing); methods of phenol recovery from fruits (citrus fruits, berries, apples, olives); ways of extracting phenols from peel and seeds; isolation of phenols from leaves; techniques used for quantification of phenols (direct methods for total phenol content, chromatographic methods, atmospheric pressure ionization); and driving forces directing research into analytical techniques for fruit phenols analysis (production of natural food antioxidants and functional foods, detection of adulteration). Conditions are presented for extraction and determination of phenols from 78 fruit products (including fruits, fruit juices, fruit purees, wines, etc.).

CC J (Fruits, Vegetables and Nuts)
 CT ANALYTICAL TECHNIQUES; FRUIT JUICES; FRUITS; PHENOLS; REVIEWS

L3 ANSWER 12 OF 21 FSTA COPYRIGHT 2003 IFIS
 AN 2000(08):N0428 FSTA
 TI **Phenolic** compounds in virgin **olive** oil. II.
 Reappraisal of the extraction, HPLC separation, and quantification procedures.

AU Pirisi, F. M.; Cabras, P.; Cao, C. F.; Migliorini, M.; Muggelli, M.
 CS Dipartimento di Tossicologia, Sezione Alimenti e Ambiente, via Ospedale 72, 09123.Cagliari, Italy. Tel. 39 070 675 8610. Fax 39 070 675 8612. E-mail pirisi(a)unica.it

SO Journal of Agricultural and Food Chemistry, (2000), 48 (4) 1191-1196, 21 ref.
 ISSN: 0021-8561
 DT Journal
 LA English
 AB Extraction (**solid**/liquid SPE and liquid/liquid LLE) and HPLC separation and quantification methods for analysis of **polyphenolic** compounds in **olive** oils were evaluated in an attempt to explain the differences in oil phenol contents reported in the literature. This study was carried out on virgin **olive** oils prepared from 1 cv. and produced under the same protocol. The extraction methods are practically equivalent, but the SPE technique is more favourable because it is faster and simpler. It was shown that the chromatographic features and method of chemical expression of the concentration may greatly affect the final values. Thus, under the same analytical method, the total concentration values of polyphenols from the same oil showed variations from 18 to 80%, according to the formality of expression as gallic acid, caffeic acid, or tyrosol equivalents. The role of the nature and spectrophotometric features of the phenols and the internal standard is also discussed; it was found to be an important source of variation. A gradient separation with an eluent mixture of acetonitrile-sulphuric acid (0.1 mol/l), detection at 225 nm, and quantitative calculation of **polyphenolic** compounds in oils (expressed as tyrosol equivalents, THY.sub.e.sub.q) is proposed.

CC N (Fats, Oils and Margarine)
 CT EXTRACTION; HIGH PERFORMANCE LIQUID CHROMATOGRAPHY; **OLIVE** OILS; PHENOLS; HPLC

L3 ANSWER 13 OF 21 FSTA COPYRIGHT 2003 IFIS

AN 1999(07):J1750 FSTA

TI **Polyphenolic** content in five Tuscany cultivars of *Olea europaea* L.

AU Romani, A.; Mulinacci, N.; Pinelli, P.; Vincieri, F. F.; Cimato, A.

CS Dipartimento di Scienze Farmaceutiche, Univ. degli Studi di Firenze, 50121 Florence, Italy

SO Journal of Agricultural and Food Chemistry, (1999), 47 (3) 964-967, 16 ref.

ISSN: 0021-8561

DT Journal

LA English

AB In this study, **polyphenolic** compounds extracted from **olive** fruits of 5 registered cv. were analysed. A **solid** -liquid extraction (LSE) procedure with an Extrelut cartridge (diatomaceous earth) using different eluents was developed to obtain **polyphenolic** compounds. HPLC-DAD [diode array detection] and HPLC-MS methods were applied for the quali-quantitative analysis of each fraction obtained from LSE. Results showed that the LSE procedure with a diatomaceous earth cartridge is a rapid and reproducible fractioning method able to obtain a quantitative recovery of all compounds and to collect fractions directly analysed by HPLC. A comparison of different cv. shows significant quantitative differences in some polyphenols, such as verbascoside, anthocyanic compounds, and oleuropein derivatives.

CC J (Fruits, Vegetables and Nuts)

CT EXTRACTION; HIGH PERFORMANCE LIQUID CHROMATOGRAPHY; OLIVES; POLYPHENOLS; CV; HPLC

TN Extrelut

L3 ANSWER 14 OF 21 FSTA COPYRIGHT 2003 IFIS

AN 1999(06):N0325 FSTA

TI **Phenolic** compounds of virgin **olive** oil: influence of **paste** preparation techniques.

AU Caponio, F.; Alloggio, V.; Gomes, T.

CS Correspondence (Reprint) address, T. Gomes, Istituto di Produzioni e Preparazioni Alimentari, Univ. degli Studi di Bari, I-71100 Foggia, Italy. Fax +39-80-544-2939. E-mail tommaso.gomes(a)agr.uniba.it

SO Food Chemistry, (1999), 64 (2) 203-209, 19 ref.

ISSN: 0308-8146

DT Journal

LA English

AB **Phenolic** compounds in virgin **olive** oils made from the cv. Coratina (typically bitter and pungent) and Ogliarola Salentina (typically sweet) were evaluated qualitatively and quantitatively. HPLC was employed for analysis of **phenolics** and high resolution GC-FID for fatty acid profiling; resistance of oils to autoxidation was determined by the Rancimat technique. Effects of grinding method (milling for 20 min or hammer-crushing) and kneading procedure (no kneading or kneading for 20 min at 20-25°C) were also examined. Total phenols and induction times were significantly related in both oils; an unidentified peak in the HPLC pattern was closely related to resistance to oxidation. **Phenolic** compounds could be grouped into simple phenols (largely 3,4-dihydroxyphenylethanol and p-hydroxyphenylethanol) and hydrolysable phenols, which were present at much higher concentration than simple phenols. Simple phenols were increased in kneaded oils and in stone milled oils, whereas the hydrolysable fraction was reduced by kneading and was higher in hammer crushed oils. Coratina oils showed higher resistance to oxidation and higher total phenols and **phenolics** than Ogliarola Salentina oils.

CC N (Fats, Oils and Margarine)

CT COMMINATION; KNEADING; MILLING; **OLIVE OILS**; OLIVES; OXIDATION; PHENOLS; AUTOXIDATION; CRUSHING

L3 ANSWER 15 OF 21 FSTA COPYRIGHT 2003 IFIS

AN 1998(09):N0436 FSTA

TI The influence of **olive paste** preparation techniques on the quality of **olive oil**. II. Evolution of **phenolic** substances and of some quality parameters referred to the ripening of drupes in virgin **olive oil** from the Coratina cv.
AU Alloggio, V.; Caponio, F.
CS Istituto di Ind. Agrarie, Univ. degli Studi, Bari, Italy
SO Rivista Italiana delle Sostanze Grasse, (1997), 74 (10) 443-447, 13 ref.
ISSN: 0035-6808

DT Journal

LA Italian

SL English

AB In studies designed to reduce the bitter/pungent taste of oils extracted from Coratina cv. olives, samples were crushed either in a hammer mill or a stone mill. The hammer mill proved more effective in reducing the olives' **phenolic** contents (initially 436-628 mg/kg), although the extraction rate tended to decline (to 44-32%) as the drupes ripened. Nevertheless, the stone mill produced oils with oxidation stability comparable to that obtained with the hammer mill, and can be used to prepare oils from olives which give a bitter/pungent flavour. HPLC analysis of the **phenolic** compounds (which did not include oleuropein) revealed presence of an unknown peak showing good correlation ($r = 0.92$) with the induction time. [See V. Alloggio et al., Rivista Italiana delle Sostanze Grasse (1996) 73, 335-360 for part I.]

CC N (Fats, Oils and Margarine)

CT COMMINATION; FLAVOUR; **OLIVE OILS**; OLIVES; PHENOLS; RIPENING; BITTERNESS

L3 ANSWER 16 OF 21 FSTA COPYRIGHT 2003 IFIS

AN 1997(10):N0042 FSTA

TI **Phenolic** compounds in virgin **olive oils**: fractionation by **solid** phase extraction and antioxidant activity assessment.

AU Litridou, M.; Linssen, J.; Schols, H.; Bergmans, M.; Posthumus, M.; Tsimidou, M.; Boskou, D.

CS Lab. of Food Chem. & Tech., Dep. of Chemistry, Aristotle Univ. of Thessaloniki, 54006 Thessaloniki, Greece

SO Journal of the Science of Food and Agriculture, (1997), 74 (2) 169-174, 18 ref.
ISSN: 0022-5142

DT Journal

LA English

AB The polar fraction of virgin **olive oil** was separated into two main parts (A and B) using **solid** phase extraction. Analysis of individual components by RP-HPLC indicated that the part (A) contained only simple phenols and **phenolic** acids. Part (B) had a complex nature. The two parts tested for their antioxidant activity showed relatively high protection factors in safflower oil stored at 80°C. Part B was found to contribute more than part A to the stability of the oil. The antioxidant activity of both fractions was related to their content of total polyphenols and o-diphenols. Acidic and alkaline hydrolysis showed significant quantitative changes in the HPLC profiles indicating the presence of ether and ester bonds while high-performance anion exchange chromatography of sugars after hydrolysis gave evidence for the presence of only traces of glycosides. A first attempt to identify a characteristic chromatographic peak of part B by HPLC fractionation and mass spectrometry showed the presence of an ester of tyrosol most probably with a dicarboxylic acid.

CC N (Fats, Oils and Margarine)

CT ALCOHOLS; AROMATIC COMPOUNDS; OILS; **OLIVE OILS**; OXIDATION; PHENOLS; VEGETABLE PRODUCTS; ANTIOXIDATIVE ACTIVITY

L3 ANSWER 17 OF 21 FSTA COPYRIGHT 2003 IFIS

AN 1997(08):N0024 FSTA
 TI Effects of talc addition and operating mode on the quality and oxidative stability of virgin **olive** oils obtained by centrifugation.
 AU Cert, A.; Alba, J.; Leon-Camacho, M.; Moreda, W.; Perez-Camino, M. C.
 CS Inst. de la Grasa, Avda. Padre Garcia Tejero 4, E-41012 Seville, Spain.
 Fax 34-5-461.67.90
 SO Journal of Agricultural and Food Chemistry, (1996), 44 (12) 3930-3934, 12 ref.
 ISSN: 0021-8561
 DT Journal
 LA English
 AB Continuous centrifugation, a widely used procedure for extraction of virgin **olive** oil, involves crushing olives, mixing the **olive paste**, and centrifugation with or without water addition ('three phase' or 'two phase' modes, respectively). Virgin **olive** oils were obtained following both procedures, with and without talc addition. Acidity value, peroxide index, UV absorption at 270 and 232 nm, glyceridic polar compounds, oxidized triglycerides, diglycerides, iron, copper, tocopherols, **phenolic** compounds, and oxidative stability were determined and the results statistically analyzed. The talc addition gave rise to a small increase in the oil stability and a slight decrease in oxidized triglyceride levels. The oils obtained by the 'two phase' mode showed a greater concentration of **phenolic** compounds than the homologous oils obtained by the 'three phase' mode. Oils processed by the 'three phase' mode showed a significant correlation between their stability and their **phenolic** concentration.

CC N (Fats, Oils and Margarine)
 CT EXTRACTION; OILS; **OLIVE OILS**; PHYSICAL PROPERTIES; PROCESSING; VEGETABLE PRODUCTS; PHYSICOCHEMICAL PROPERTIES

L3 ANSWER 18 OF 21 FSTA COPYRIGHT 2003 IFIS
 AN 1994(05):N0020 FSTA
 TI High performance liquid chromatography of **phenolic** compounds in virgin **olive** oils using amperometric detection.
 AU Mannino, S.; Cosio, M. S.; Bertuccioli, M.
 CS Dipartimento di Sci. e Tec. Alimentari e Microbiol., Univ. degli Studi di Milano, 20133 Milan, Italy
 SO Italian Journal of Food Science, (1993), 5 (4) 363-370, 15 ref.
 DT Journal
 LA English
 AB A simple and reproducible method for the quantitative determination of **phenolic** compounds in virgin **olive** oils was developed. Following **solid** phase extraction with a C.sub.1.sub.8 Bond Elut cartridge and reversed-phase HPLC, these compounds were detected amperometrically using a dual electrode detector in the parallel configuration operating at +0.5 and 1.0 V vs. Ag/AgCl. Virgin **olive** oils of different origin and cv. and obtained using various techniques were analysed. Consistent recoveries of >95% were achieved from spiked samples and the detection limit was in the order of 2 p.p.b. The method is easy to perform and can be used for large scale routine analysis.

CC N (Fats, Oils and Margarine)
 CT ALCOHOLS; ANALYTICAL TECHNIQUES; AROMATIC COMPOUNDS; HIGH PERFORMANCE LIQUID CHROMATOGRAPHY; OILS; **OLIVE OILS**; PHENOLS; VEGETABLE PRODUCTS; HPLC

L3 ANSWER 19 OF 21 FSTA COPYRIGHT 2003 IFIS
 AN 1994(04):N0013 FSTA
 TI Comparison of anaerobic filter and anaerobic contact process for **olive** mill wastewater previously fermented with Geotrichum candidum.
 AU Borja, R.; Gonzalez, A.

CS Inst. de la Grasa y sus Derivados (CSIC), Avda Padre Garcia Tejero 4,
E-41012 Seville, Spain

SO Process Biochemistry, (1994), 29 (2) 139-144, 25 ref.
ISSN: 0032-9592

DT Journal

LA English

AB [An anaerobic filter reactor and an anaerobic contact reactor for
treatment of **olive** mill wastewater (OMW) prefermented by aerobic
growth with *Geotrichum candidum* were compared.] During anaerobic
digestion, a steady state was reached more quickly with the anaerobic
contact process than with an anaerobic filter. The daily methane
production and chemical oxygen demand removal recorded with the anaerobic
filter were greater than those obtained in the anaerobic contact reactor.
The anaerobic filter yielded a biogas with a higher % of methane and
effluent with a lower volatile fatty acid and volatile **solid**
(VS) content than the anaerobic contact reactor. Immobilization of VS in
an anaerobic filter fermenter is a means of reducing the inhibition of
methanogenic bacteria by the residual **phenolic** compounds present
in prefermented OMW. A yield of 0.18 and 0.34 l methane/g chemical oxygen
demand was obtained with the anaerobic contact and anaerobic filter
reactors, respectively. Additional advantages of fixed film over contact
fermenters include the elimination of mechanical mixing and sludge
settling and return.

CC N (Fats, Oils and Margarine)

CT BIOREMEDIATION; BIOTECHNOLOGY; OILS; **OLIVE OILS**; VEGETABLE
PRODUCTS; WASTE WATER; **OLIVE OIL MILLS EFFLUENTS**

L3 ANSWER 20 OF 21 FSTA COPYRIGHT 2003 IFIS

AN 1975(06):N0262 FSTA

TI [Addition of enzymes and **phenolic** tannin adsorbents to
olive pastes used for single pressure or percolation oil
extraction. I. Effects on oil yields and some operating variables.]

AU Montedoro, G.; Petruccioli, G.

CS Istituto di Ind. Agrarie, Univ. di Perugia, Italy

SO Rivista Italiana delle Sostanze Grasse, (1974), 51 (10) 378-385, 29 ref.

DT Journal

LA Italian

SL English

AB Effects of adding enzyme preparations (cellulase, hemicellulase,
pectinase, protease, acid protease) and/or **phenolic** tannin
adsorbing agents (Polyclar AT, methylcellulose, egg albumin) during
crushing of olives on oil yield and on optimum time of crushing, time and
temperature of working and water content of **olive paste** were
investigated for 2 industrial oil extraction systems: (i) single pressure,
and (ii) percolation with pressure. In laboratory tests, addition of
cellulase + pectinase produced 10% increase in yield, rising to 16-17%
when combined with adsorbent. In (i) and (ii), oil yield and extraction
times were improved by both types of additives. In (i), addition of
enzymes allowed a 50% reduction in total processing time with 20 min
crushing, 60 min working at 35°C and 30% moisture content. Addition
of 20% whole **olive** stones improved oil extraction rate to 88% of
total oil (99% extractable oil) after 40 min, vs. 75 and 87% without
stones and 51 and 86% without stones or enzyme treatment. Total oil yield
was 24.96%. In (ii), total extraction time was reduced 20-25% by addition
of enzymes, to 20 min crushing and 60 min working at 35°C and 30%
moisture content for best results (total oil yield 24.92%). The analytical
results obtained for oils allowed their classification as virgin oils.

CC N (Fats, Oils and Margarine)

CT ENZYMES; EXTRACTION; **OLIVE OILS**; ENZYME PREPARATIONS

L3 ANSWER 21 OF 21 FSTA COPYRIGHT 2003 IFIS

AN 1972(06):N0309 FSTA

TI [Migration of auxiliary manufacturing substances from plastics films to

liquid and **solid** fat and substitutes. IX. Discussion of the results of extraction and migration studies.]

Migration von Hilfsstoffen der Kunststoffverarbeitung aus Folien in fluessige und feste Fette bzw. Sumulantien. IX. Diskussion der Ergebnisse bisheriger Extraktions- und Migrationsuntersuchungen.

AU Bruck, C. G. vom; Figge, K.; Piater, H.; Wolf, V.

CS Unilever Forschungslab., Hamburg, W. Germany

SO Deutsche Lebensmittel-Rundschau, (1971), 67 (12) 444-450, 11 ref.

DT Journal

LA German

SL English; French

AB Migration of additives from (i) high density polyethylene, (ii) low density polyethylene, (iii) polyvinyl chloride and (iv) polystyrene into 4 edible oils and fats, 5 synthetic triglycerides, and 4 organic solvents was investigated using ¹⁴C-labelled tracer additives (**phenolic** antioxidant Ionox-330 for (i), (ii), (iii) and (iv), lubricant stearic acid amide for (i) and (ii), organo-tin stabilizer Advastab 17 MOK for (iii), and plasticizer n-butyl stearate for (iv). Fat simulants used were a mixture of medium-chain triglycerides for (i) and (ii), tricaprins or a mixture of hydrogenated cyclic fatty acid triglycerides for (iii) and medium-chain triglycerides, paraffin oil and methanol for (iv). Results of time-dependent migration tests at 20°C for 60 days or during a 5 h extraction at 65°C are summarized and discussed. Migration values of an additive from plastics films into sunflower oil, **olive** oil, Biskin and margarine were approx. equal. Quantities of an additive migrating from various plastics into a given edible oil or fat were very different. Under extraction conditions, paraffin oil and n-heptane were found to be suitable simulants for (iii) and coconut oil for (iv). Far too high extraction values were obtained when these simulants were used for (i) and (ii). The same applied when n-heptane was used for (iv) and diethylether for all 4 plastics.

CC N (Fats, Oils and Margarine)

CT ADDITIVES; ANTIOXIDANTS; FATS; GLYCERIDES; MARGARINES; MIGRATION; PLASTICIZERS; PLASTICS; POLYETHYLENE; POLYSTYRENE; POLYVINYL CHLORIDE; SOLVENTS; STABILIZERS; TRIGLYCERIDES; CAPRIN; COCONUT OIL; LUBRICANTS; LUBRICATION; MARGARINE; **OLIVE OIL**; PVC; SOFTENERS; SUNFLOWER OIL; TRICAPRIN; ANTIOXIDANTS ; COCONUT OIL ; FATS ; MARGARINE ; **OLIVE OIL** ; POLYETHYLENE ; POLYSTYRENE ; SOLVENTS ; STABILIZERS ; SUNFLOWER OIL

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25883 OLIVE

75969 PASTE

79 OLIVE(W) PASTE

5487 PHENOLICS

128274 PHENOLIC

L4 12 OLIVE(W) PASTE AND (PHENOLICS OR PHENOLIC)

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L4 ANSWER 1 OF 12 CAPLUS COPYRIGHT 2003 ACS

2003:176501 Olives and their production waste products as sources of bioactive compounds. Visioli, Francesco; Galli, Claudio (Department of Pharmacological Sciences, University of Milan, Milan, Italy). Current Topics in Nutraceutical Research, 1(1), 85-88 (English) 2003. CODEN: CTNRC3. ISSN: 1540-7535. Publisher: New Century Health Publishers, LLC.

AB Olives are rich in **phenolic** antioxidants that, during olive oil production, end up either in olive oil or, for their major part, in the waste water. In fact, during the malaxation process, i.e. the continuous washing of the **olive paste** with warm water prior to the procedure of separation of the oil from the paste, a considerable amount of water is employed. This water, in addition to that endogenously contained in the olives, make up to 50% of the total yield of the **olive paste** (olive oil amts. to .apprx.15%) and is named "waste water". In fact, due to the failure to develop a suitable end-of-pipe treatment technol., olive mill waste waters (OMWW) are currently discarded by olive oil manufacturers. In vitro, **phenolic** components of olive oil and its waste water have been shown to exert potent biol. activities including, but not limited to, antioxidant actions. Catechols from olive mill waste water can be isolated in rather pure form: 10-20 per cent of the total phenols is recovered and the only bioactive catechol is hydroxytyrosol. This ortho-diphenol has been shown by several authors to exert potent antioxidant and addnl. biol. activities, both in vitro and in vivo.

L4 ANSWER 2 OF 12 CAPLUS COPYRIGHT 2003 ACS

2003:79077 Minor polar compounds of olive oil: Composition, factors of variability and bioactivity. Dell'Agli, Mario; Bosisio, Enrica (Institute of Pharmacological Sciences, Faculty of Pharmacy, University of Milan, Milan, 20133, Italy). Studies in Natural Products Chemistry, 27(Bioactive Natural Products (Part H)), 697-734 (English) 2002. CODEN: SNPCE2. Publisher: Elsevier Science B.V..

AB The adoption of the Mediterranean style of diet is recommended for reducing the risk of developing chronic illness, mainly coronary heart disease and cancer. The Mediterranean diet reflects the food pattern of Greece, Southern Italy and Crete in the early sixties and is characterized by high consumption of plant food (fruits, vegetables, breads, cereals, potatoes, beans, nuts and seeds), moderate consumption of fish, poultry and dairy products, low amts. of red meat and low to moderate intake of wine. Olive oil is the dietary fat of choice in Mediterranean countries, but its consumption is increasing elsewhere in USA, Japan, Russia and Canada. Olive oil has a peculiar fatty acid composition rich in oleic acid (56-84% of the total fatty acids) and linoleic acid (3-21%). In addition it contains a variety of minor constituents responsible for the unique organoleptic properties and stability to oxidation Unsaponifiable fraction of olive oil is of a diverse chem. nature. The composition varies depending on cultivars, drupe ripening, climate and environment, time of harvesting and

storage and processing techniques for the oil production The highest concentration

of these compds. is in the extra-virgin olive oil, obtained by the first cold pressing of the **olive paste**. The minor components are important not only from a com. standpoint in order to assess the high quality and good palatability of the olive oil, for but also for their potential beneficial impact on human health. As concerns the nutritional aspects, the antioxidant and free radical scavenger properties of the **phenolic** portion of the unsaponifiable fraction were seen as highly relevant. The most recent research reports on a variety of biol. activities demonstrated in in vitro studies (protection of low d. lipoproteins from oxidation, inhibition of platelet aggregation and production of proinflammatory mediators etc.). Indirect evidence that olive oil phenols might act also in vivo should stimulate future research for measuring bioavailability and kinetics following dietary intake and confirming in vivo reproducibility of in vitro data.

L4 ANSWER 3 OF 12 CAPLUS COPYRIGHT 2003 ACS

2002:846022 Document No. 138:3782 Influence of olive processing on virgin olive oil quality. Di Giovacchino, Luciano; Sestili, Simona; Di Vincenzo, Daria (Istituto Sperimentale per la Elaiotecnica, Citta S. Angelo, 65013, Italy). European Journal of Lipid Science and Technology, 104(9-10), 587-601 (English) 2002. CODEN: EJLTFM. ISSN: 1438-7697. Publisher: Wiley-VCH Verlag GmbH & Co. KGaA.

AB A review. Virgin olive oil quality depends on different factors such as olive cultivar, olive tree cultivation and the operations of olive picking, storage and processing. Many investigations concerning these factors were carried out and, in particular, the influence of technol. operations of olive processing on oil yields and quality was examined. Leaf-removal and olive washing are important operations for the mech. safety of the olive extracting equipment which operates at high speed and for the organoleptic quality of olive oil. The leaves mixed with olives may increase, in fact, the organoleptic attributes of "fresh-cut" grass or "green", especially if metallic crushers are used to prepare **olive paste**. Olive crushing has an important influence on organoleptic and nutritional qualities of virgin olive oil. When mill stones are used, the obtained oils have a lower intensity of bitterness and pungency because this crushing method helps to produce oil with a lower content of **phenolic** substances. When metallic crushers are used oils have, due to the violent action, a higher content of **phenolic** compds. and are more bitter and pungent. **Olive paste** malaxation influences the oil yields and also the antioxidant content of oil. With prolonged malaxation oil yields, generally, increase while the phenol content of oils decreases. When "difficult" olive pastes are processed, it is possible to increase oil yields by using technol. co-adjuvants such as talc and enzymic products during the malaxation. The separation of oil from solid and liquid phases of **olive paste** is performed by using either pressure, percolation or centrifugation systems. All systems may provide good-quality oil if olive fruits are sound and at the correct ripeness, but the centrifugation system helps to avoid or reduce the risk of an organoleptic contamination. The new centrifugal decanters, operating without adding water (or only a minimal amount of water) to **olive paste**, save heat energy and the oils obtained are more fruity and have a higher content of natural **phenolic** antioxidants.

L4 ANSWER 4 OF 12 CAPLUS COPYRIGHT 2003 ACS

2002:578647 Document No. 137:351843 The effects of harvest and extraction methods on the antioxidant content (**phenolics**, α -tocopherol, and β -carotene) in virgin olive oil. Gimeno, E.; Castellote, A. I.; Lamuela-Raventos, R. M.; De la Torre, M. C.; Lopez-Sabater, M. C. (Facultat de Farmacia, CeRTA, Departamento Nutricio i Bromatologia, Universitat de Barcelona, Barcelona, 08028, Spain). Food

Chemistry, 78(2), 207-211 (English) 2002. CODEN: FOCHDJ. ISSN: 0308-8146. Publisher: Elsevier Science Ltd..

- AB The authors studied the effects of harvesting and two processing systems (two-phase centrifugation and three-phase centrifugation) on olive oil quality. Oils extracted from high quality olives do not differ in free acidity, peroxide value and UV light absorption. The fatty acid composition was also unaffected. However, the antioxidant content of the oil was higher from green olives than from ripe olives. Neither extraction method affects the presence of α -tocopherol and β -carotene, however, the **phenolic** content is higher in the two-phase method due to the addition of lukewarm water that is used to dilute the **olive paste**.

L4 ANSWER 5 OF 12 CAPLUS COPYRIGHT 2003 ACS

2001:413121 Document No. 135:121453 Natural antioxidants and volatile compounds of virgin olive oils obtained by two or three-phases centrifugal decanters. Di Giovacchino, Luciano; Costantini, Nello; Serraiocco, Arnaldo; Surricchio, Giulio; Basti, Carla (Istituto Sperimentale per la Elaiotecnica, Citta S. Angelo, 65013, Italy). European Journal of Lipid Science and Technology, 103(5), 279-285 (English) 2001. CODEN: EJLTFM. ISSN: 1438-7697. Publisher: Wiley-VCH Verlag GmbH.

- AB Research has been carried out to ascertain the influence of different centrifugal decanters employed in olive process on oil yields and qual. characteristics and composition of volatile compds. of virgin olive oil. Tests were performed in an olive oil mill equipped with centrifugal decanters at 2 or 3-phases. Results show that oil yields were similar and oils extracted from good-quality olives do not differ in free fatty acids, peroxide value, UV absorptions, and organoleptic assessment. Total phenols and o-diphenols content as well as induction time values are higher in oils obtained by the centrifugal decanter at 2-phases, because it requires less quantity of water added to **olive paste** in comparison to the 3-phases centrifugal decanter. The amount of water added det. the dilution of the aqueous phase and lowers the concentration of the **phenolic** substances more soluble in vegetable waste water. Due to the partition equilibrium law the concentration of the same substances consequently diminishes in the oil. In this research, the coefficient of the partition equilibrium of total phenols between oil and vegetable water was calculated and discussed. No difference occurred, due to the different decanters employed, in the average values of the volatile components of the head-space of oils.

L4 ANSWER 6 OF 12 CAPLUS COPYRIGHT 2003 ACS

1998:608221 Document No. 130:3230 Characterization of single variety extra virgin olive oils of three cultivars from Tuscany. Spugnoli, P.; Parenti, A.; Cardini, D.; Modi, G.; Caselli, S. (Dipartimento di Ingegneria Agraria e Forestale, Universita Degli Studi, Florence, Italy). Rivista Italiana delle Sostanze Grasse, 75(5), 227-233 (Italian) 1998. CODEN: RISGAD. ISSN: 0035-6808. Publisher: Stazione Sperimentale per le Industrie degli Oli e dei Grassi.

- AB The phys., chem., and organoleptic characteristics of 3 typical Tuscany varieties of extra virgin olive oil and the raw olives (Frantoio, Moraiolo, Maremmano) were compared. The phys. characteristics of the raw olives and the crushed **olive paste** particle dimensions were determined. The complete chem. anal. (fatty acids, **phenolic** compds.) of the oils was performed to highlight the differences due genetic varietal properties. The organoleptic evaluation by performed by panel tests. The effects of olive oil storage in dark bottles for up to 4 mo at ambient temperature were also evaluated.

L4 ANSWER 7 OF 12 CAPLUS COPYRIGHT 2003 ACS

1998:121816 Document No. 128:153355 The influence of **olive paste** preparation techniques on the quality of olive oil. Note II.

Evolution of **phenolic** substances and quality parameters related to drupe ripening in virgin olive oil from the Coratina cultivar. Alloggio, V.; Caponio, F. (Istituto di Industrie Agrarie, Università degli Studi, Bari, Italy). Rivista Italiana delle Sostanze Grasse, 74(10), 443-447 (Italian) 1997. CODEN: RISGAD. ISSN: 0035-6808. Publisher: Stazione Sperimentale per le Industrie degli Oli e dei Grassi.

- AB Selected quality parameters were determined in "bitter-pungency" oils extracted from Coratina olives harvested at different ripening stages (Nov., Dec., Jan.) and processed by four different procedures. The content of **phenolic** substances, which at the beginning was very high (436-628 mg/kg), decreased by 50% as the ripening of olives progressed. Hammer crushers had better phenol extraction ability than stone mills; the difference was decreasing with the drupe maturity (44 to 32%). Reversed-phase HPLC anal. yielded fractions of simple phenols (components identified by retention times) and complex phenols (unidentified). The simple phenol fraction was <2% of total phenols. The complex phenol fraction did not contain oleuropein, although oleuropein aglycon was present. Oil oxidation resistance (determined as induction time in the Rancimat system) was always rather high and was pos. correlated with the levels of complex phenols. One component of the complex phenol fraction correlated with the oxidation resistance better than simple phenols.

L4 ANSWER 8 OF 12 CAPLUS COPYRIGHT 2003 ACS

1997:254793 Document No. 126:316734 Natural antioxidants of virgin olive oil obtained by two and tri-phase centrifugal decanters. Angerosa, Franca; di Giovacchino, Luciano (Istituto sperimentale per la Elaiotecnica, Pescara, 65013, Italy). Grasas y Aceites (Seville), 47(4), 247-254 (Spanish/English) 1996. CODEN: GRACAN. ISSN: 0017-3495. Publisher: Instituto de la Grasa y sus Derivados.

- AB The new dual-phase decanter does not require any addition of water to process **olive paste** and produces very limited quantities of vegetable water. Consequently, the elimination of big waste water problem makes particularly interesting this technol. innovation. Therefore, to evaluate, in comparison with the traditional decanter its effectiveness in relation to the quali-quant. composition of natural antioxidants, tocopherols and **phenolic** compds. were determined on samples of virgin olive oils obtained by centrifugal decanters at 2 and 3 phases. Particularly, **phenolic** substances were analyzed by colorimetric, HPLC and HRGC methods. Thus, oils extracted by dual-phase decanter had higher concns. of tocopherols and phenols, especially o-diphenols, and showed higher stability to oxidation. The resistance to oxidation appeared better correlated with the content of simple and linked o-diphenols and of aglycon of de-carbomethoxy ligstroside.

L4 ANSWER 9 OF 12 CAPLUS COPYRIGHT 2003 ACS

1996:720770 Document No. 126:18038 The influence of **olive paste** preparation techniques on the quality of olive oil. Note I. Qualitative and quantitative HPLC profile of **phenolic** substances in virgin olive oil from the cultivar Ogliarola Salentina. Alloggio, V.; Caponio, F.; De Leonardis, T. (Istituto Di Industrie Agrarie, Università Degli Studi, Bari, Italy). Rivista Italiana delle Sostanze Grasse, 73(8), 355-360 (Italian) 1996. CODEN: RISGAD. ISSN: 0035-6808. Publisher: Stazione Sperimentale per le Industrie degli Oli e dei Grassi.

- AB A comparative examination of systems used for **olive paste** preparation was made on samples of virgin oil extracted from drupes of the Ogliarola Salentina cultivar and showed considerable qual. and quant. differences in the composition of phenols. In particular, hammer crushers had a greater phenol extraction capacity than the traditional stone mills. In all cases, the kneading process led to a reduction of the total phenol content. A direct relationship was evident between oxidative stability and the phenol content. The anal. of **phenolic** substances was preformed by HPLC and showed that greater amts. of an unidentified fraction and of hydroxytyrosol were present in the oils extracted from hammer-crushed olives

than in the oils from milled olives. By contrast, greater amts. of known **phenolic** substances, mainly tyrosol and oleuropein, were present in oils extracted from milled olives, especially when kneaded.

L4 ANSWER 10 OF 12 CAPLUS COPYRIGHT 2003 ACS

1996:708157 Document No. 126:6795 Effects of Talc Addition and Operating Mode on the Quality and Oxidative Stability of Virgin Olive Oils Obtained by Centrifugation. Cert, Arturo; Alba, Jose; Leon-Camacho, Manuel; Moreda, Wenceslao; Perez-Camino, M. Carmen (Instituto de la Grasa, Seville, E-41012, Spain). Journal of Agricultural and Food Chemistry, 44(12), 3930-3934 (English) 1996. CODEN: JAFCAU. ISSN: 0021-8561. Publisher: American Chemical Society.

AB Continuous centrifugation, a widely used procedure for extraction of virgin olive oil, involves crushing olives, mixing the **olive paste**, and centrifugation with or without water addition ("three phase" or "two phase" modes, resp.). Virgin olive oils were obtained following both procedures, with and without talc addition. Acidity value, peroxide index, UV absorption at 270 and 232 nm, glyceridic polar compds., oxidized triglycerides, diglycerides, iron, copper, tocopherols, **phenolic** compds., and oxidative stability were determined and the results statistically analyzed. The talc addition gave rise to a small increase in the oil stability and a slight decrease in oxidized triglyceride levels. The oils obtained by the "two phase" mode showed a greater concentration of **phenolic** compds. than the homologous oils obtained by the "three phase" mode. Oils processed by the "three phase" mode showed a significant correlation between their stability and their **phenolic** concentration.

L4 ANSWER 11 OF 12 CAPLUS COPYRIGHT 2003 ACS

1992:234192 Document No. 116:234192 Utilization of a yeast pectinase in olive oil extraction and red wine making processes. Servili, Maurizio; Begliomini, Alberto L.; Montedoro, Gianfrancesco; Petruccioli, Maurizio; Federici, Federico (Ist. Ind. Agrarie, Univ. Perugia, Perugia, I-06100, Italy). Journal of the Science of Food and Agriculture, 58(2), 253-60 (English) 1992. CODEN: JSFAAE. ISSN: 0022-5142.

AB The possibility of using an endo-polygalacturonase produced by *Cryptococcus albidus albidus* (yeast pectinase) in the mech. olive oil extraction process and in the production of red wine was investigated.

Compared

with the control and olive pastes treated with a com. enzyme preparation, an increase in oil yield was achieved by treatment with the yeast preparation. Also, the finished oil quality (turbidity, oxidation induction time, chlorophyll, and the content of polyphenols and aroma compds.) was generally better. Treatment of red musts with yeast pectinase resulted in an improved aroma profile in the wines, even in the absence of an increase in color intensity. Moreover, the use of the yeast pectinase did not cause any particular increase in the MeOH content of the finished wines.

L4 ANSWER 12 OF 12 CAPLUS COPYRIGHT 2003 ACS

1978:188396 Document No. 88:188396 The polyphenols of olives and olive oil. Part 3. Effects of temperature and kneading time on the oil polyphenol content. Solinas, M.; Di Giovacchino, L.; Mascolo, A. (Ist. Sper. Elaiotec., Pescara, Italy). Rivista Italiana delle Sostanze Grasse, 55(1), 19-23 (Italian) 1978. CODEN: RISGAD. ISSN: 0035-6808.

AB The effect of temperature and kneading time on polyphenol content of olive oil produced in oil milling by expression was examined. Olives of variety Coratina (just ripe), Ogliarola di Bitonti (ripe), and Cellina di Nardo (overripes and fallen) are processed at various kneading times (0, 30, and 60 min) and temps. (18 and 30°). Total polyphenols and their constituents were measured. The nature and quality of olives correspond, in the oils, to a high content of **phenolic** constituents. As regards kneading operations, an increase in temperature increased the polyphenol

content in the oils, whereas kneading time extension caused a decrease. The calcn. of partition coeffs. of polyphenols between oil and ground **olive paste** yielded information for process control.

=> s olive and (paste or solid or solids or particle or particles)

25883 OLIVE
75969 PASTE
865227 SOLID
256830 SOLIDS
565912 PARTICLE
643432 PARTICLES

L5 2305 OLIVE AND (PASTE OR SOLID OR SOLIDS OR PARTICLE OR PARTICLES)

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128274 PHENOLIC
5487 PHENOLICS

L6 69 L5 AND (PHENOLIC OR PHENOLICS)

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L6 ANSWER 1 OF 69 CAPLUS COPYRIGHT 2003 ACS

2003:176501 Olives and their production waste products as sources of bioactive compounds. Visioli, Francesco; Galli, Claudio (Department of Pharmacological Sciences, University of Milan, Milan, Italy). Current Topics in Nutraceutical Research, 1(1), 85-88 (English) 2003. CODEN: CTNRC3. ISSN: 1540-7535. Publisher: New Century Health Publishers, LLC.

AB Olives are rich in **phenolic** antioxidants that, during **olive** oil production, end up either in **olive** oil or, for their major part, in the waste water. In fact, during the malaxation process, i.e. the continuous washing of the **olive paste** with warm water prior to the procedure of separation of the oil from the **paste**, a considerable amount of water is employed. This water, in addition to that endogenously contained in the olives, make up to 50% of the total yield of the **olive paste** (**olive** oil amts. to .apprx.15%) and is named "waste water". In fact, due to the failure to develop a suitable end-of-pipe treatment technol., **olive** mill waste waters (OMWW) are currently discarded by **olive** oil manufacturers. In vitro, **phenolic** components of **olive** oil and its waste water have been shown to exert potent biol. activities including, but not limited to, antioxidant actions. Catechols from **olive** mill waste water can be isolated in rather pure form: 10-20 per cent of the total phenols is recovered and the only bioactive catechol is hydroxytyrosol. This ortho-diphenol has been shown by several authors to exert potent antioxidant and addnl. biol. activities, both in vitro and in vivo.

L6 ANSWER 2 OF 69 CAPLUS COPYRIGHT 2003 ACS

2003:94138 Liquid-liquid and **solid**-phase extractions of phenols from virgin **olive** oil and their separation by chromatographic and electrophoretic methods. Bendini, Alessandra; Bonoli, Matteo; Cerretani, Lorenzo; Biguzzi, Barbara; Lercker, Giovanni; Gallina Toschi, Tullia (Department of Food Science, University of Bologna, Via Ravennate 1020, Cesena, 47023, Italy). Journal of Chromatography, A, 985(1-2), 425-433 (English) 2003. CODEN: JCRAEY. ISSN: 0021-9673. Publisher: Elsevier Science B.V..

AB The high oxidative stability of virgin **olive** oil is related to its high monounsaturated/polyunsaturated ratio and to the presence of antioxidant compounds, such as tocopherols and phenols. In this paper, the isolation of **phenolic** compounds from virgin **olive** oil, by different methods, was tested and discussed. Particularly liquid-liquid and **solid**-phase extraction methods were compared, assaying, for the latter, three stationary phases (C8, C18 and Diol) and several elution mixts.

Quantification of **phenolic** and o-diphenolic substances in the exts. was performed by the traditional Folin-Ciocalteu method and the sodium molybdate reaction, resp. Furthermore, the quantification of **phenolic** compds. in the exts. and in a standard mixture was carried out both with diode array and mass spectrometric detection and capillary zone electrophoresis.

L6 ANSWER 3 OF 69 CAPLUS COPYRIGHT 2003 ACS

2003:79077 Minor polar compounds of **olive** oil: Composition, factors of variability and bioactivity. Dell'Agli, Mario; Bosisio, Enrica (Institute of Pharmacological Sciences, Faculty of Pharmacy, University of Milan, Milan, 20133, Italy). Studies in Natural Products Chemistry, 27(Bioactive Natural Products (Part H)), 697-734 (English) 2002. CODEN: SNPCE2. Publisher: Elsevier Science B.V..

AB The adoption of the Mediterranean style of diet is recommended for reducing the risk of developing chronic illness, mainly coronary heart disease and cancer. The Mediterranean diet reflects the food pattern of Greece, Southern Italy and Crete in the early sixties and is characterized by high consumption of plant food (fruits, vegetables, breads, cereals, potatoes, beans, nuts and seeds), moderate consumption of fish, poultry and dairy products, low amts. of red meat and low to moderate intake of wine. **Olive** oil is the dietary fat of choice in Mediterranean countries, but its consumption is increasing elsewhere in USA, Japan, Russia and Canada. **Olive** oil has a peculiar fatty acid composition rich in oleic acid (56-84% of the total fatty acids) and linoleic acid (3-21%). In addition it contains a variety of minor constituents responsible for the unique organoleptic properties and stability to oxidation Unsaponifiable fraction of **olive** oil is of a diverse chem. nature. The composition varies depending on cultivars, drupe ripening, climate and environment, time of harvesting and storage and processing techniques for the oil production The highest concentration of these compds. is in the extra-virgin **olive** oil, obtained by the first cold pressing of the **olive** paste. The minor components are important not only from a com. standpoint in order to assess the high quality and good palatability of the **olive** oil, for but also for their potential beneficial impact on human health. As concerns the nutritional aspects, the antioxidant and free radical scavenger properties of the **phenolic** portion of the unsaponifiable fraction were seen as highly relevant. The most recent research reports on a variety of biol. activities demonstrated in in vitro studies (protection of low d. lipoproteins from oxidation, inhibition of platelet aggregation and production of proinflammatory mediators etc.). Indirect evidence that **olive** oil phenols might act also in vivo should stimulate future research for measuring bioavailability and kinetics following dietary intake and confirming in vivo reproducibility of in vitro data.

L6 ANSWER 4 OF 69 CAPLUS COPYRIGHT 2003 ACS

2003:46337 The use of biotechnology means during oil mechanical extraction process: relationship with sensory and nutritional parameters of virgin **olive** oil quality. Servili, M.; Selvaggini, R.; Taticchi, A.; Baldioli, M.; Montedoro, G. F. (Dipartimento di Scienze e Tecnologie Agro-alimentari, Ambientali e Microbiologiche, University of Molise, Campobasso, 86100, Italy). Acta Horticulturae, 586(Vol. 2, Proceedings of the 4th International Symposium on Olive Growing, 2000, Vol. 2), 557-560 (English) 2002. CODEN: AHORA2. ISSN: 0567-7572. Publisher: International Society for Horticultural Science.

AB The concentration of **phenolic** compds. in the oil is affected by the complexion of these compds. with the colloids of pastes that can reduce their release in the oil during processing. So far however, PPO and POD activities can also affect their concentration during processing while the LPO catalyze the formation of volatile compds. responsible for the green flavor of oil. The effect of the addition of enzyme com. preps., during

malaxation, and the influence of the O₂ level in the malaxed pastes on the **phenolic** and volatile concentration were studied. Enzyme com. preps. improved **phenolic** concentration in the **paste** oil and vegetation waters. The use of N₂ flush during malaxation reduced the oxidation of phenols while hardly modified volatile compds. responsible for the green flavor of oil related to LPO activity.

L6 ANSWER 5 OF 69 CAPLUS COPYRIGHT 2003 ACS

2003:46335 Relationships between **phenolic** composition of **olive** fruit and **olive** oil: the importance of the endogenous enzymes. Montedoro, G.; Baldioli, M.; Selvaggini, R.; Begliomini, A. L.; Taticchi, A.; Servili, M. (Dipartimento di Scienze degli Alimenti, Sez. di Industrie Agrarie, University of Perugia, Perugia, 06126, Italy). Acta Horticulturae, 586(Vol. 2, Proceedings of the 4th International Symposium on Olive Growing, 2000, Vol. 2), 551-556 (English) 2002. CODEN: AHORA2. ISSN: 0567-7572. Publisher: International Society for Horticultural Science.

AB The modification of **phenolic** compds. during oil mech. extraction process and the interactions with endogenous glycosidases and oxidoreductases such as polyphenoloxidase (PPO) and peroxidase (POD) of **olive** fruit were studied. After crushing, the concentration of secoiridoid glycosides, such as oleuropein and demethyloleuropein, decreased and their aglycon derivs. increased significantly in crushed pastes. These compds. were partially released in the oil during crushing and decreased strongly in the pastes and oils during malaxation. PPO and POD catalyze **phenolic** oxidation in the **paste** and in the oil during processing, in fact the thermal inactivation of PPO and POD reduced the oxidative degradation of **phenolic** compds. The malaxation under N₂ flow, applied to control PPO and POD activities, strongly improved the concentration of **phenolic** compds. in the **paste** and oil.

L6 ANSWER 6 OF 69 CAPLUS COPYRIGHT 2003 ACS

2002:846025 Document No. 138:3784 Chemical analysis, quality control and packaging issues of **olive** oil. Kiritsakis, Apostolos; Kanavouras, Antonis; Kiritsakis, Konstantinos (Department of Food Technology, School of Food Technology and Nutrition, Highest Technological Education Institute of Thessaloniki, Thessaloniki, 54101, Greece). European Journal of Lipid Science and Technology, 104(9-10), 628-638 (English) 2002. CODEN: EJLTFM. ISSN: 1438-7697. Publisher: Wiley-VCH Verlag GmbH & Co. KGaA.

AB A review. The aim of the present review is to present some methods for the quality evaluation and mainly to describe new trends in the anal. of triacylglycerols, **phenolic** and flavor compds. of **olive** oil. Thus, methods used to determine the **olive** oil quality and its resistance to oxidative deterioration, mainly the conductivity ones, are included. Concerning the new trends in **olive** oil anal., methods such as NMR spectroscopy, Fourier-transform IR techniques, differential scanning calorimetry, atmospheric pressure chem. ionization-mass spectroscopy, **solid**-phase micro extraction using nonpolar and bipolar fibers and some others, are described. Since proper packaging of **olive** oil provides conditions to assure adequate product life destination and marketing, a presentation of the packaging material, packaging to oil interactions and some other packaging issues are also pointed out.

L6 ANSWER 7 OF 69 CAPLUS COPYRIGHT 2003 ACS

2002:846022 Document No. 138:3782 Influence of **olive** processing on virgin **olive** oil quality. Di Giovacchino, Luciano; Sestili, Simona; Di Vincenzo, Daria (Istituto Sperimentale per la Elaiotecnica, Citta S. Angelo, 65013, Italy). European Journal of Lipid Science and Technology, 104(9-10), 587-601 (English) 2002. CODEN: EJLTFM. ISSN: 1438-7697. Publisher: Wiley-VCH Verlag GmbH & Co. KGaA.

AB A review. Virgin **olive** oil quality depends on different factors

such as **olive** cultivar, **olive** tree cultivation and the operations of **olive** picking, storage and processing. Many investigations concerning these factors were carried out and, in particular, the influence of technol. operations of **olive** processing on oil yields and quality was examined. Leaf-removal and **olive** washing are important operations for the mech. safety of the **olive** extracting equipment which operates at high speed and for the organoleptic quality of **olive** oil. The leaves mixed with olives may increase, in fact, the organoleptic attributes of "fresh-cut" grass or "green", especially if metallic crushers are used to prepare **olive paste**. **Olive** crushing has an important influence on organoleptic and nutritional qualities of virgin **olive** oil. When mill stones are used, the obtained oils have a lower intensity of bitterness and pungency because this crushing method helps to produce oil with a lower content of **phenolic** substances. When metallic crushers are used oils have, due to the violent action, a higher content of **phenolic** compds. and are more bitter and pungent. **Olive paste** malaxation influences the oil yields and also the antioxidant content of oil. With prolonged malaxation oil yields, generally, increase while the phenol content of oils decreases. When "difficult" **olive** pastes are processed, it is possible to increase oil yields by using technol. co-adjuvants such as talc and enzymic products during the malaxation. The separation of oil from **solid** and liquid phases of **olive paste** is performed by using either pressure, percolation or centrifugation systems. All systems may provide good-quality oil if **olive** fruits are sound and at the correct ripeness, but the centrifugation system helps to avoid or reduce the risk of an organoleptic contamination. The new centrifugal decanters, operating without adding water (or only a minimal amount of water) to **olive paste**, save heat energy and the oils obtained are more fruity and have a higher content of natural **phenolic** antioxidants.

L6. ANSWER 8 OF 69 CAPLUS COPYRIGHT 2003 ACS

2002:751581 Document No. 137:368970 **Phenolic** Compounds Profile of Cornicabra Virgin **Olive** Oil. Gomez-Alonso, Sergio; Salvador, Maria Desamparados; Fregapane, Giuseppe (Departamento de Quimica Analitica y Tecnologia de Alimentos, Facultad de Quimicas, Universidad de Castilla-La Mancha, Ciudad Real, 13071, Spain). Journal of Agricultural and Food Chemistry, 50(23), 6812-6817 (English) 2002. CODEN: JAFCAU. ISSN: 0021-8561. Publisher: American Chemical Society.

AB This study presents the **phenolic** compds. profile of com. Cornicabra virgin **olive** oils from 5 successive crop seasons (1995/1996 to 1999/2000; n = 97), determined by **solid** phase extraction reversed phase HPLC (SPE RP-HPLC), and its relationship with oxidative stability, processing conditions, and a preliminary study on variety classification. The median of total phenols content was 38 ppm (as syringic acid), although a wide range was observed, from 11 to 76 ppm. The main phenols found were the dialdehydic form of elenolic acid linked to tyrosol (p-HPEA-EDA; 9 ± 7 ppm, as median and interquartile range), oleuropein aglycon (8 ± 6 ppm), and the dialdehydic form of elenolic acid linked to hydroxytyrosol (3,4-DHPEA-EDA; 5 ± 8 ppm). In many cases the correlation with oxidative stability was higher when the sum of the dialdehydic form of elenolic acid linked to hydroxytyrosol (3,4-DHPEA-EDA) and oleuropein aglycon ($r^2 = 0.91-0.96$) or the sum of these 2 and hydroxytyrosol ($r^2 = 0.90-0.97$) was considered than was observed with HPLC total phenols ($r^2 = 0.91-0.95$) and especially with colorimetric determination

of total polyphenols and o-diphenols ($r^2 = 0.77-0.95$ and $0.78-0.92$, resp.). 3,4-DHPEA-EDA, p-HPEA-EDA, the aglycons of oleuropein and ligstroside, and HPLC total phenols content presented highly significant differences ($p = 0.001-0.010$) with respect to the dual- and triple-phase extraction systems used, whereas colorimetric total polyphenols content did not

(p = 0.348) and o-diphenols showed a much lower significant difference (p = 0.031). The five variables that most satisfactorily classified the principal com. Spanish virgin **olive** oil varieties were 1-acetoxypinoresinol, 4-(acetoxylethyl)-1,2-dihydroxybenzene (3,4-DHPEA-AC), ligstroside aglycon, p-HPEA-EDA, and RT 43.3 contents.

L6 ANSWER 9 OF 69 CAPLUS COPYRIGHT 2003 ACS

2002:578647 Document No. 137:351843 The effects of harvest and extraction methods on the antioxidant content (**phenolics**, α -tocopherol, and β -carotene) in virgin **olive** oil. Gimeno, E.; Castellote, A. I.; Lamuela-Raventos, R. M.; De la Torre, M. C.; Lopez-Sabater, M. C. (Facultat de Farmacia, CeRTA, Departamento Nutricio i Bromatologia, Universitat de Barcelona, Barcelona, 08028, Spain). Food Chemistry, 78(2), 207-211 (English) 2002. CODEN: FOCHDJ. ISSN: 0308-8146. Publisher: Elsevier Science Ltd..

AB The authors studied the effects of harvesting and two processing systems (two-phase centrifugation and three-phase centrifugation) on **olive** oil quality. Oils extracted from high quality olives do not differ in free acidity, peroxide value and UV light absorption. The fatty acid composition was also unaffected. However, the antioxidant content of the oil was higher from green olives than from ripe olives. Neither extraction method affects the presence of α -tocopherol and β -carotene, however, the **phenolic** content is higher in the two-phase method due to the addition of lukewarm water that is used to dilute the **olive** **paste**.

L6 ANSWER 10 OF 69 CAPLUS COPYRIGHT 2003 ACS

2002:435295 Document No. 138:302802 Improved sample extraction and clean-up for the GC-MS determination of BADGE and BFDGE in vegetable oil. Brede, C.; Skjevrak, I.; Herikstad, H.; Anensen, E.; Austvoll, R.; Hemmingsen, T. (Naeringsmiddeltilsynet for Midt-Rogaland, Stavanger, N-4033, Norway). Food Additives and Contaminants, 19(5), 483-491 (English) 2002. CODEN: FACOEB. ISSN: 0265-203X. Publisher: Taylor & Francis Ltd..

AB A straightforward method was established for the determination of migration contaminants in **olive** oil with a special focus on the two can-coating migration compds. bisphenol A diglycidyl ether (BADGE) and bisphenol F diglycidyl ether (BFDGE). The preferred sample preparation was a single liquid-liquid extraction of compds. from the oil into 20%

(volume/volume)

methanol in acetonitrile, followed by clean-up with **solid-phase** extraction on aminopropyl bonded to silica. This purification procedure selectively

removed all free fatty acids from the exts. without removing **phenolic** compds. of interest. The **solid-phase** extraction columns were used many times by implementing a procedure of washing out the strongly retained fatty acids with 2% acetic acid in methanol. Gas chromatog. coupled with full scan (m/z 33-700) electron ionization mass spectrometry was used for the determination of several model compds. in **olive** oil samples. BADGE and BFDGE could be determined in the 0.05-2mg kg-1 range in oil samples with a relative SD of <6% (six replicates). The method was used in an enforcement campaign for the Norwegian Food Control Authority to analyze vegetable oil samples from canned fish-in-oil.

L6 ANSWER 11 OF 69 CAPLUS COPYRIGHT 2003 ACS

2002:127387 Document No. 136:199146 Development and evaluation of an HPLC/DAD method for the analysis of **phenolic** compounds from **olive** fruits. Vinha, Ana F.; Silva, Branca M.; Andrade, Paula B.; Seabra, Rosa M.; Pereira, Jose A.; Oliveira, M. Beatriz (CEQUP, Servico de Farmacognosia, Faculdade de Farmacia, Universidade do Porto, Oporto, 4050-047, Port.). Journal of Liquid Chromatography & Related Technologies, 25(1), 151-160 (English) 2002. CODEN: JLCTFC. ISSN: 1082-6076. Publisher: Marcel Dekker, Inc..

AB A new HPLC/DAD methodol. for separating nine **phenolic** compds. is

described. This methodol. is applied to the definition of qual. and quant. profiles of three Portuguese **olive** fruit cultivars (Cobrancosa, Madural and Verdeal). Two different extraction methods were needed for the complete definition of their profiles, one of them including a Sep-pack C18 cleaning step. The chromatog. separation was achieved using a Spherisorb ODS2 (25.0 + 0.46 cm; 5 µm, **particle** size) column. The solvent system used was a gradient of water-formic acid (19:1) and methanol, with a flow rate of 0.9 mL/min. The detection limit values for **phenolic** compds. were between 0.04 and 4.32 µg/mL and the method was precise. As a general rule, the recovery values were high. This technique can also be useful in the discrimination of Portuguese **olive** fruit cultivars.

L6 ANSWER 12 OF 69 CAPLUS COPYRIGHT 2003 ACS

2001:771583 Document No. 136:172012 Characterisation and evolution of a soil affected by **olive** oil mill wastewater disposal. Sierra, J.; Marti, E.; Montserrat, G.; Cruanas, R.; Garau, M. A. (Facultat de Farmacia, Laboratori d'Edafologia, Universitat de Barcelona, Barcelona, 08028, Spain). Science of the Total Environment, 279(1-3), 207-214 (English) 2001. CODEN: STENDL. ISSN: 0048-9697. Publisher: Elsevier Science Ireland Ltd..

AB A site used for 10 yr for uncontrolled **olive** oil mill wastewater disposal was studied. Once it was closed, sedimented **solid** waste on the soil surface was removed. To evaluate the effect on soil characteristics, morphol., and anal. parameters, a soil profile from the affected zone was compared to those from a control soil located near the landfill. Residual pollution levels in the underlying soil were determined. Results showed wastewater infiltration in the soil caused carbonate dissoln. and redistribution and modifications in soil pH, elec. conductivity, nutrient content, **phenolic** compds., and biol. activity of soil horizons. In time, waste removal, natural leaching, and biol. activity effectively decreased the elec. conductivity and **phenolic** compds., although residual concns. can be important even 2 yr later.

L6 ANSWER 13 OF 69 CAPLUS COPYRIGHT 2003 ACS

2001:491188 Document No. 135:210057 High-performance liquid chromatography evaluation of phenols in virgin **olive** oil during extraction at laboratory and industrial scale. Garcia, Aranzazu; Brenes, Manuel; Martinez, Fernando; Alba, Jose; Garcia, Pedro; Garrido, Antonio (Food Biotechnology Department, Instituto de la Grasa (CSIC), Seville, Spain). Journal of the American Oil Chemists' Society, 78(6), 625-629 (English) 2001. CODEN: JAOCA7. ISSN: 0003-021X. Publisher: AOCS Press.

AB **Phenolic** compds. are of fundamental importance to the quality and nutritional properties of virgin **olive** oils. The HPLC anal. of simple and complex **olive** oil phenols in the streams generated in the 2-phase extraction system was carried out using Arbequina and Picual olives. The malaxation stage reduced the concentration of o-diphenols in oil ca.

50-70%, while the concentration of the non-o-diphenols remained constant, particularly the recently identified lignans 1-acetoxypinoresinol and pinoresinol. Oxidation of o-diphenols at laboratory scale was avoided by malaxing

the **paste** under a nitrogen atmospheric **Phenolic** compds. in the wash water used in the vertical centrifuge were also identified. Hydroxytyrosol, tyrosol, and the dialdehydic form of elenolic acid linked to hydroxytyrosol were the most representative phenols in these waters. Hence, **phenolic** compds. in the wash waters came from both the aqueous and the lipid phases of the decanter oily must.

L6 ANSWER 14 OF 69 CAPLUS COPYRIGHT 2003 ACS

2001:472416 Document No. 135:60498 Antioxidant compositions extracted from olives and **olive** by-products. Cuomo, John; Rabovskiy, Alexandre B. (Usana, Inc., USA). PCT Int. Appl. WO 2001045514 A1 20010628, 40 pp.

DESIGNATED STATES: W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR.

(English). CODEN: PIXXD2. APPLICATION: WO 2000-US34096 20001215.

PRIORITY: US 1999-467439 19991220.

AB The present invention provides methods of extracting antioxidant compns. from **olive**-based starting materials, including olives, **olive** pulps, **olive** oil, and wastewater from **olive** oil manufacturing. One method includes the steps of extracting the olives, **olive** pulp or **olive** oil with a polar aqueous solvent to form an aqueous phase containing antioxidant components, passing the aqueous phase through a **solid** matrix to trap the antioxidant components on the matrix, and washing the matrix with a polar organic solvent to yield a solution of the antioxidant composition in the polar organic solvent. Another method includes

the

steps passing the wastewater from **olive** oil production containing antioxidant components through a **solid** matrix to trap the antioxidant components on the matrix, and washing the matrix with a polar organic solvent to yield a solution of the antioxidant composition in the

polar organic

solvent. The present invention also provides antioxidant compns. and methods of increasing the antioxidant activity of a product using such compns.

L6 ANSWER 15 OF 69 CAPLUS COPYRIGHT 2003 ACS

2001:413121 Document No. 135:121453 Natural antioxidants and volatile compounds of virgin **olive** oils obtained by two or three-phases centrifugal decanters. Di Giovacchino, Luciano; Costantini, Nello; Serraiocco, Arnaldo; Surricchio, Giulio; Basti, Carla (Istituto Sperimentale per la Elaiotecnica, Citta S. Angelo, 65013, Italy). European Journal of Lipid Science and Technology, 103(5), 279-285 (English) 2001. CODEN: EJLTFM. ISSN: 1438-7697. Publisher: Wiley-VCH Verlag GmbH.

AB Research has been carried out to ascertain the influence of different centrifugal decanters employed in **olive** process on oil yields and qual. characteristics and composition of volatile compds. of virgin **olive** oil. Tests were performed in an **olive** oil mill equipped with centrifugal decanters at 2 or 3-phases. Results show that oil yields were similar and oils extracted from good-quality olives do not differ in free fatty acids, peroxide value, UV absorptions, and organoleptic assessment. Total phenols and o-diphenols content as well as induction time values are higher in oils obtained by the centrifugal decanter at 2-phases, because it requires less quantity of water added to **olive paste** in comparison to the 3-phases centrifugal decanter. The amount of water added dets. the dilution of the aqueous phase

and

lowers the concentration of the **phenolic** substances more soluble in vegetable waste water. Due to the partition equilibrium law the concentration

of the

same substances consequently diminishes in the oil. In this research, the coefficient of the partition equilibrium of total phenols between oil and

vegetable

water was calculated and discussed. No difference occurred, due to the different decanters employed, in the average values of the volatile components of the head-space of oils.

L6 ANSWER 16 OF 69 CAPLUS COPYRIGHT 2003 ACS

2001:312166 Document No. 135:60409 Influence of **olive** crushing temperature on phenols in **olive** oils. Caponio, Francesco;

Gomes, Tommaso (Dip. Progettazione Gestione Sist. Agro-Zootec. Forestali - PRO.GE.S.A., Univ. Bari, Bari, 70126, Italy). European Food Research and Technology, 212(2), 156-159 (English) 2001. CODEN: EFRTFO. ISSN: 1438-2377. Publisher: Springer-Verlag.

- AB An exptl. investigation was carried out to evaluate the influence of different temps. at which olives are hammer-crushed and **paste** kneaded on the quality of oil and particularly on the **phenolic** components. Temperature influenced the diffusion of **phenolic** compds. in oil. Greater amts. of hydroxytyrosol, tyrosol, caffeic acid, hydroxycaffeic acid and oleuropein were measured in oils obtained from previously refrigerated olives. Kneading brought about a reduction of total phenols when it was performed on olives crushed at a higher temperature (18°C) while it led to a slight increase when it was executed on pastes of previously refrigerated olives (6°C).

L6 ANSWER 17 OF 69 CAPLUS COPYRIGHT 2003 ACS

2001:310924 Document No. 134:309912 HPLC analysis of the **phenolic** fraction of Arbequina virgin **olive** oil. Relations to the bitterness index K225 and oil stability. Beltran, G.; Jimenez, A.; Aguilera, M. P.; Uceda, M. (Estacion de Olivicultura y Elaiotecnica, CIFA «Venta del Llano» Direccion Gral. de Investigacion Agraria, Consejeria de Agricultura y Pesca, Junta de Andalucia, Jaen, 23620, Spain). Grasas y Aceites (Sevilla), 51(5), 320-324 (Spanish) 2000. CODEN: GRACAN. ISSN: 0017-3495. Publisher: Instituto de la Grasa.

- AB **Phenolic** compds. in **olive** oils are important because of their effect on oil shelf-life and sensory characteristics of virgin **olive** oils. The **phenolic** fraction of the Arbequina virgin **olive** oils was characterized by reversed-phase HPLC. The bitterness index K225, total phenols, and autoxidn. stability were also determined. The HPLC anal. used a Pecosphere RP-18 column (83x4.6 mm, 3µm), gradient elution with mobile phases containing 2% aqueous acetic acid and methanol, and UV detection at 280 nm. The K225 index was determined by oil sample **solid** phase extraction and extract absorbance measurement at 225 nm. Among the **phenolic** compds. separated by HPLC, a compound with the retention time of 34.49 min closely correlated with the K225 bitterness index and Rancimat oil stability at 98°C. The resp. regression coeffs. were 0.974 and 0.918.

L6 ANSWER 18 OF 69 CAPLUS COPYRIGHT 2003 ACS

2001:309343 Document No. 135:9372 Characterization and lime treatment of **olive** mill wastewater. Aktas, E. S.; Imre, S.; Ersoy, L. (Department of Analytical Chemistry, Faculty of Pharmacy, Istanbul University, Beyazit-Istanbul, 34452, Turk.). Water Research, 35(9), 2336-2340 (English) 2001. CODEN: WATRAG. ISSN: 0043-1354. Publisher: Elsevier Science Ltd..

- AB Seventeen **olive** mill wastewater samples were characterized. Total, fixed, volatile, suspended, volatile-suspended **solids**, COD, oil-grease, polyphenol, volatile phenol, N and reducing sugar were determined. Effects of lime were studied. The effect of lime on an artificial **phenolic** mixture was examined.

L6 ANSWER 19 OF 69 CAPLUS COPYRIGHT 2003 ACS

2001:160986 Document No. 134:365897 **Solid**-phase extraction and gas chromatographic analysis of **phenolic** compounds in virgin **olive** oil. Liberatore, L.; Procida, G.; d'Alessandro, N.; Cichelli, A. (Dipartimento di Scienze, Universita G.D'Annunzio di Chieti e Pescara, Pescara, I-65127, Italy). Food Chemistry, 73(1), 119-124 (English) 2001. CODEN: FOCHDJ. ISSN: 0308-8146. Publisher: Elsevier Science Ltd..

- AB A careful investigation on the potential application of **solid** phase extraction (SPE)-gas chromatog. procedure in the anal. of phenol compds. in virgin **olive** oils was carried out. In doped refined **olive** oil samples a comparison between liquid/liquid and SPE extraction

evidenced higher recovery when the C18 sorbent phase was employed whereas, in the case of total suppression of residual syranolic group (C18 EC), only contradictory data was obtained. The same procedures were carried out on 10 genuine samples of virgin **olive** oil. As observed with the stds., C18 sorbent phase gave higher values compared to C18 EC and the liquid/liquid extraction procedures. Satisfactory results were obtained in the detection of ligstroside aglycon but for the oleuropein aglycon the quant. is not completely reliable for the overlap of some unknown no-phenol compds.

L6 ANSWER 20 OF 69 CAPLUS COPYRIGHT 2003 ACS

2001:130226 Document No. 134:310021 Effect of Enzyme Treatment during Mechanical Extraction of **Olive** Oil on **Phenolic** Compounds and Polysaccharides. Vierhuis, Esther; Servili, Maurizio; Baldioli, Maura; Schols, Henk A.; Voragen, Alphons G. J.; Montedoro, Gianfrancesco (Department of Agrotechnology and Food Sciences Laboratory of Food Chemistry, Wageningen University, Wageningen, 6703 HD, Neth.). Journal of Agricultural and Food Chemistry, 49(3), 1218-1223 (English) 2001. CODEN: JAFCAU. ISSN: 0021-8561. Publisher: American Chemical Society.

AB The effect of the use of cell-wall-degrading-enzyme preps. during the mech. extraction process of virgin **olive** oil on the **phenolic** compds. and polysaccharides was investigated. The use of the enzyme preps. increased the concentration of **phenolic** compds. in the **paste**, oil, and byproducts. Especially, the contents of secoiridoid derivs. such as the dialdehydic form of elenolic acid linked to 3,4-dihydroxyphenylethanol (3,4-DHPEA-EDA) and an isomer of oleuropein aglycon (3,4-DHPEA-EA), which have high antioxidant activities, increased significantly in the **olive** oil. Furthermore, the use of an N2 flush during processing strongly increased the **phenolic** concentration. Analyses of the pectic polymers present in the **paste** showed that the use of pectinolytic enzyme preps. increased the yield of the buffer soluble pectins and the proportion of mols. with a lower mol. mass. Also, the content of uronic acids in the buffer soluble extract increased considerably

due to the use of the enzyme preps. Anal. of the polymeric carbohydrates in the vegetation waters showed the presence of mainly pectic polymers. The addition of com. enzyme preps. increased the uronic acid content of the polysaccharides in the vegetation water substantially compared to the blank. This study showed that the addition of cell-wall-degrading enzymes did improve the **olive** oil quality; however, mechanisms remained unclear.

L6 ANSWER 21 OF 69 CAPLUS COPYRIGHT 2003 ACS

2000:532223 Document No. 133:232296 Determination of Hydroxytyrosol in Plasma by HPLC. Ruiz-Gutierrez, Valentina; Juan, M. Emilia; Cert, Arturo; Planas, Joana M. (Instituto de la Grasa y sus derivados, Consejo Superior de Investigaciones Cientificas, Seville, E-41012, Spain). Analytical Chemistry, 72(18), 4458-4461 (English) 2000. CODEN: ANCHAM. ISSN: 0003-2700. Publisher: American Chemical Society.

AB Hydroxytyrosol (2-(3,4-dihydroxyphenyl)ethanol), a **phenolic** compound present in extravirgin **olive** oil, has been reported to contribute to the prevention of cardiovascular disease. The present study describes an accurate and reproducible reversed-phase HPLC method to measure hydroxytyrosol in plasma. This compound was extracted from acidified plasma by **solid**-phase extraction using an Oasis HLB copolymer. The plasma sample was rinsed with water and methanol in water (5:95; volume/volume). Hydroxytyrosol was eluted with methanol, which was subsequently evaporated under a nitrogen stream. Anal. by HPLC with diode array-UV detection was carried out using a C18 column and a gradient elution with acidified water and methanol/acetonitrile (50:50; volume/volume). The method was validated by the analyses of plasma samples spiked with pure hydroxytyrosol, obtaining a linear correlation (0.9986) and precision

with a coefficient of variation ranging from 0.79 to 6.66%. The recovery was .apprx.100%, and the limit of detection was 37 ng/mL. The oral administration of hydroxytyrosol to rats and its subsequent detection in plasma showed that the method is suitable for pharmacokinetic studies.

L6 ANSWER 22 OF 69 CAPLUS COPYRIGHT 2003 ACS

2000:456831 Document No. 133:58013 Fortification of food products with **olive** fruit ingredients. Van Buuren, Jan; Van Putte, Karel P. A. M.; Overbeeke, Nico (Unilever N.V., Neth.; Unilever Plc; Hindustan Lever Ltd; Van Buuren, Jan; Van Putte, Karel P. A. M.). PCT Int. Appl. WO 2000038541 A1 20000706, 24 pp. DESIGNATED STATES: W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 1999-EP9571 19991206. PRIORITY: EP 1998-204441 19981223.

AB Method of fortification of a food product with **olive** fruit ingredients, particularly **phenolic** compds. comprises adding **solid** matter derived from non-debittered **olive** fruit to the food product.

L6 ANSWER 23 OF 69 CAPLUS COPYRIGHT 2003 ACS

2000:205479 Document No. 132:333515 **Phenolic** Compounds in Virgin **Olive** Oil. 2. Reappraisal of the Extraction, HPLC Separation, and Quantification Procedures. Pirisi, Filippo M.; Cabras, Paolo; Cao, Clara Falqui; Migliorini, Marzia; Muggelli, Marco (Dipartimento di Tossicologia Sezione Alimenti e Ambiente, Cagliari, 09123, Italy). Journal of Agricultural and Food Chemistry, 48(4), 1191-1196 (English) 2000. CODEN: JAFCAU. ISSN: 0021-8561. Publisher: American Chemical Society.

AB The extraction procedures (**solid**/liquid SPE and liquid/liquid LLE) and HPLC separation and quantification methods of polyphenolic compds. were checked in virgin **olive** oils to explain the differences in content reported in the literature. The work was carried out on oils prepared from one cultivar and produced under the same protocol. The extraction methods are practically equivalent, but the SPE technique is more favorable because it is faster and simpler. It has been proved that the chromatog. features and the method of chem. expression of the concns. may greatly affect the final values. Thus, under the same anal. method, the total concentration values of polyphenols of the same oil show variations from 18 to 80%, according to the formality of expression as gallic acid, caffeic acid, or tyrosol equivalent. The role of the nature and spectrophotometric features of the phenols and of the internal standard is also discussed, and it was an important source of reported variation. A gradient separation with an eluent mixture acetonitrile-sulfuric acid (0.1 mol/L), detection at 225 nm, and quant. calcn. of polyphenolic compds. in oils (expressed as tyrosol equivalent, THYeq) is proposed.

L6 ANSWER 24 OF 69 CAPLUS COPYRIGHT 2003 ACS

1999:563322 Document No. 132:34973 **Phenolic** composition of **olive** fruit and virgin **olive** oil: Distribution in the constitutive parts of fruit and evolution during the oil mechanical extraction process. Servili, M.; Baldioli, M.; Mariotti, F.; Montedoro, G. F. (Istituto di Industrie Agrarie, University of Perugia, Perugia, 06126, Italy). Acta Horticulturae, 474(Vol. 2, Third International Symposium on Olive Growing, 1997), 609-613 (English) 1999. CODEN: AHORA2. ISSN: 0567-7572. Publisher: International Society for Horticultural Science.

AB **Phenolic** compds. of peel, pulp and seed of **olive** fruit, their distribution in oil and byproducts during oil mech. extraction and the endogenous enzymes that can catalyze **phenolic** modifications

during processing were studied. All the constitutive parts of the fruit contained secoiridoids and **phenolic** acids, while luteolin-7-glucoside and rutin were found only in the peel. Crushing led to a strong decrease of secoiridoid glucoside and an increase of aglycon derivs. Verbascoside did not vary significantly. A noticeable amount of **paste** phenols (>96%) was found in byproducts; oil did not contain either secoiridoid glycosides or verbascoside but showed a high concentration

of

secoiridoid aglycons. Malaxation reduced phenol concentration in oil and in byproducts. High levels of glycosidase and oxidoreductase activities were observed in pulp and seed.

L6 ANSWER 25 OF 69 CAPLUS COPYRIGHT 2003 ACS

1999:489247 Document No. 131:256438 High-performance liquid chromatography evaluation of phenols in **olive** fruit, virgin **olive** oil, vegetation waters, and pomace and 1D- and 2D-nuclear magnetic resonance characterization. Servili, Maurizio; Baldioli, Maura; Selvaggini, Roberto; Miniati, Enrico; Macchioni, Alceo; Montedoro, Gianfrancesco (Istituto di Industrie Agrarie, University of Perugia, Perugia, 06126, Italy). Journal of the American Oil Chemists' Society, 76(7), 873-882 (English) 1999. CODEN: JAOCA7. ISSN: 0003-021X. Publisher: AOCS Press.

AB **Phenolic** compds. are the most important antioxidants of virgin **olive** oil. This paper reports on the application of **solid** phase extraction (SPE) in the separation of **phenolic** compds. from **olive** fruit, **olive** oil, and byproducts of the mech. extraction of the oil and the complete spectroscopic characterization by NMR of demethyloleuropein and verbascoside extracted from **olive** fruit. SPE led to a higher recovery of **phenolic** compds. from olives than did liquid/liquid extraction. SPE also was used to sep. **phenolic** compds. from pomaces and vegetation waters. Phenyl-acid and phenyl-alc. concns. in exts. obtained from SPE and liquid/liquid extraction were not significantly different ($P < 0.05$). The recovery of the dialdehydic form of elenolic acid linked to 3,4-(dihydroxyphenyl)ethanol and an isomer of oleuropein aglycon, however, was low.

L6 ANSWER 26 OF 69 CAPLUS COPYRIGHT 2003 ACS

1999:170472 Document No. 131:4338 Analysis of virgin **olive** oil polyphenols. Tsimidou, Maria (Laboratory of Food Chemistry and Technology, Department of Chemistry, Aristotle University of Thessaloniki, Thessaloniki, 54006, Greece). Seminars in Food Analysis, 4(1), 13-29 (English) 1999. CODEN: SFANF7. ISSN: 1084-2071. Publisher: Aspen Publishers.

AB Polyphenols evolve in olives during growth and maturation and they are transferred into the oil during its extraction. Polyphenols and tocopherols are the 2 main groups of the natural antioxidants found in virgin **olive** oil. The water-methanol extract of virgin **olive** oil, known as the polar fraction, contains **phenolic** components which play an important role in the keeping quality of the oil and influences its organoleptic characteristics. The main anal. procedures developed over the years were either colorimetric or chromatog. In all cases, the polar fraction had to be extracted from the **olive** oil matrix using various combinations of water-methanol mixts. Liquid-liquid extraction and

more

recently **solid**-phase extraction were successfully used for this purpose. Extract clean-up procedures were occasionally applied. Gas chromatog. replaced TLC for phenol determination. More recently, HPLC became

the

method of choice for the separation, identification, and quantification of these most interesting components. Hyphenated chromatog.-spectrometric techniques were the key means for structure elucidation of the complex nature of the polar fraction. All this and more was reviewed with many refs.

L6 ANSWER 27 OF 69 CAPLUS COPYRIGHT 2003 ACS

1999:96842 Document No. 130:280990 Determination of **phenolic** compounds in olives by reversed-phase chromatography and mass spectrometry. Ryan, Danielle; Robards, Kevin; Lavee, Shimon (School of Science and Technology, Charles Sturt University, Wagga Wagga, 2678, Australia). Journal of Chromatography, A, 832(1 + 2), 87-96 (English) 1999. CODEN: JCRAEY. ISSN: 0021-9673. Publisher: Elsevier Science B.V..

AB A method based on extraction from freeze-dried material and clean up by **solid-phase** extraction was optimized for recovery of **phenolic** compds. from **olive** fruit. The extracted compds. were characterized by reversed-phase liquid chromatog. using both UV, fluorescence and electrospray ionization mass spectral detection. Using this approach, oleuropein was confirmed as the major **phenolic** in **olive** fruit. Other compds. whose presence was confirmed include tyrosol, syringic, ferulic and homovanillic acids, quercetin-3-rhamnoside, ligstroside and isomers of verbascoside. Elenolic acid and its glucoside, which are not **phenolic** but are closely related, were also identified in sample exts.

L6 ANSWER 28 OF 69 CAPLUS COPYRIGHT 2003 ACS

1999:8781 Document No. 130:152800 **Phenolic** compounds of virgin **olive** oil: influence of **paste** preparation techniques. Caponio, Francesco; Alloggio, Vincenzo; Gomes, Tommaso (Inst. Ind. Agrar., Univ. Bari, Bari, I-70126, Italy). Food Chemistry, Volume Date 1999, 64(2), 203-209 (English) 1998. CODEN: FOCHDJ. ISSN: 0308-8146. Publisher: Elsevier Science Ltd..

AB An exptl. investigation was carried out on **olive** oils of the Ogliarola Salentina and Coratina cultivars to assess the influence of the two different **olive** grinding techniques and kneading process on the quality of the oils. The exptl. data obtained showed that resistance to oxidation, total phenols and **phenolic** compds. analyzed for HPLC were higher in the Coratina oils than in the Ogliarola oils. The use of hammer-crushers plus kneader rather than stone mills plus kneader always produced significant increases in the total phenols. Resistance to oxidation was assessed by the Rancimat method and showed a significant correlation with the amts. of total phenols and of an unidentified substance (peak I) which was conspicuously present amongst the substances evaluated for HPLC.

→ L6 ANSWER 29 OF 69 CAPLUS COPYRIGHT 2003 ACS

1998:608221 Document No. 130:3230 Characterization of single variety extra virgin **olive** oils of three cultivars from Tuscany. Spugnoli, P.; Parenti, A.; Cardini, D.; Modi, G.; Caselli, S. (Dipartimento di Ingegneria Agraria e Forestale, Universita Degli Studi, Florence, Italy). Rivista Italiana delle Sostanze Grasse, 75(5), 227-233 (Italian) 1998. CODEN: RISGAD. ISSN: 0035-6808. Publisher: Stazione Sperimentale per le Industrie degli Oli e dei Grassi.

AB The phys., chem., and organoleptic characteristics of 3 typical Tuscany varieties of extra virgin **olive** oil and the raw olives (Frantoio, Moraiolo, Maremmano) were compared. The phys. characteristics of the raw olives and the crushed **olive paste** **particle** dimensions were determined. The complete chem. anal. (fatty acids, **phenolic** compds.) of the oils was performed to highlight the differences due genetic varietal properties. The organoleptic evaluation by performed by panel tests. The effects of **olive** oil storage in dark bottles for up to 4 mo at ambient temperature were also evaluated.

L6 ANSWER 30 OF 69 CAPLUS COPYRIGHT 2003 ACS

1998:236965 Document No. 128:285990 **Olive** oil-processing wastes production and their characteristics in relation to **olive** oil extraction methods. Vlyssides, A. G.; Loizidou, M.; Gimouhopoulos, K.; Zorpas, A. (Chemical Engineering Dep., National Technical Univ. Athen,

Zographou, 15700, Greece). Fresenius Environmental Bulletin, 7(5/6), 308-313 (English) 1998. CODEN: FENBEL. ISSN: 1018-4619. Publisher: Fresenius Environmental Bulletin.

AB The mass balance of oil, total **solid** wastes, and wastewater for 3 different **olive** oil extraction processes (press extract, 2-phase, and 3-phase centrifugation) is presented, as well as the characteristics of the residual cakes and the wastewaters. The high BOD5 and on **phenolic** compds. content in wastewater (press and 3-phase process), and the high value of the COD/BOD5 ratio indicated that the effluents are not suitable for biol. treatment. The wet sludges from the 2-phase process contains all vegetation pollutants and are not suitable for further drying and seed oil extraction. For each ton of produced **olive** oil \approx 1560 kg dry organic pollutants were produced either as sludges or as effluents and sludges. These residues are toxic due to their on **phenolic** compds. content (138-150 kg/ton **olive** oil). The total environmental pollution from the different extraction processes is about the same.

L6 ANSWER 31 OF 69 CAPLUS COPYRIGHT 2003 ACS
1998:121816 Document No. 128:153355 The influence of **olive** **paste** preparation techniques on the quality of **olive** oil. Note II. Evolution of **phenolic** substances and quality parameters related to drupe ripening in virgin **olive** oil from the Coratina cultivar. Alloggio, V.; Caponio, F. (Istituto di Industrie Agrarie, Universita degli Studi, Bari, Italy). Rivista Italiana delle Sostanze Grasse, 74(10), 443-447 (Italian) 1997. CODEN: RISGAD. ISSN: 0035-6808. Publisher: Stazione Sperimentale per le Industrie degli Oli e dei Grassi.

AB Selected quality parameters were determined in "bitter-pungency" oils extracted from Coratina olives harvested at different ripening stages (Nov., Dec., Jan.) and processed by four different procedures. The content of **phenolic** substances, which at the beginning was very high (436-628 mg/kg), decreased by 50% as the ripening of olives progressed. Hammer crushers had better phenol extraction ability than stone mills; the difference was decreasing with the drupe maturity (44 to 32%). Reversed-phase HPLC anal. yielded fractions of simple phenols (components identified by retention times) and complex phenols (unidentified). The simple phenol fraction was <2% of total phenols. The complex phenol fraction did not contain oleuropein, although oleuropein aglycon was present. Oil oxidation resistance (determined as induction time in the Rancimat system) was always rather high and was pos. correlated with the levels of complex phenols. One component of the complex phenol fraction correlated with the oxidation resistance better than simple phenols.

L6 ANSWER 32 OF 69 CAPLUS COPYRIGHT 2003 ACS
1997:417003 Document No. 127:134912 **Phenolic** compounds in virgin **olive** oils: fractionation by **solid** phase extraction and antioxidant activity assessment. Litridou, Maria; Linssen, Jozef; Schols, Henk; Bergmans, Margot; Posthumus, Maarten; Tsimidou, Maria; Boskou, Dimitrios (Laboratory Food Chemistry Technology, Dept Chemistry, Aristotle University Thessaloniki, Thessaloniki, 54006, Greece). Journal of the Science of Food and Agriculture, 74(2), 169-174 (English) 1997. CODEN: JSFAAE. ISSN: 0022-5142. Publisher: Wiley.

AB The polar fraction of virgin **olive** oil was separated into two main parts (A and B) using **solid** phase extraction. Anal. of individual components by RP-HPLC indicated that part (A) contained only simple phenols and **phenolic** acids. Part (B) had a complex nature. The two parts tested for their antioxidant activity showed relatively high protection factors in safflower oil stored at 80°C. Part B was found to contribute more than part A to the stability of the oil. The antioxidant activity of both fractions was related to their content of total polyphenols and o-diphenols. Acidic and alkaline hydrolysis showed significant quant. changes in the HPLC profiles indicating the presence of

ether and ester bonds while high-performance anion exchange chromatog. of sugars after hydrolysis gave evidence for the presence of only traces of glycosides. A first attempt to identify a characteristic chromatog. peak of part B by HPLC fractionation and mass spectrometry showed the presence of an ester of tyrosol most probably with a dicarboxylic acid.

L6 ANSWER 33 OF 69 CAPLUS COPYRIGHT 2003 ACS

1997:259193 Document No. 126:342626 **Phenolic** compounds in virgin **olive** oils. I. Low-wavelength quantitative determination of complex phenols by high-performance liquid chromatography under isocratic elution. Pirisi, Filippo M.; Angioni, Alberto; Cabras, Paolo; Garau, Vincenzo L.; Sanjust di Teulada, Maria Teresa; Karim dos Santos, Marlene; Bandino, Giovanni (Dipartimento di Tossicologia, Università di Cagliari, Viale Diaz 182, Cagliari, 09126, Italy). Journal of Chromatography, A, 768(2), 207-213 (English) 1997. CODEN: JCRAEY. ISSN: 0021-9673. Publisher: Elsevier.

AB An HPLC method that allows the determination of complex **phenolic** compds. at low λ (225 nm) after **solid**-phase extraction from virgin **olive** oils is reported. The separation was achieved on ODS-2, ODS-1 and C8 columns in eluting mixts. 10-3 M H₂SO₄-CH₃CN employed with different ratios. The method was employed for the quant. determination of **phenolic** compds. in oils. It allows the presence of some new unknown compds. to be shown. The preliminary spectroscopic data of these compds., probably **phenolic**, are reported. The reactivity with protic solvents of the deacetoxy oleuropeine aglycon is discussed.

L6 ANSWER 34 OF 69 CAPLUS COPYRIGHT 2003 ACS

1997:254793 Document No. 126:316734 Natural antioxidants of virgin **olive** oil obtained by two and tri-phase centrifugal decanters. Angerosa, Franca; di Giovacchino, Luciano (Istituto sperimentale per la Elaiotecnica, Pescara, 65013, Italy). Grasas y Aceites (Seville), 47(4), 247-254 (Spanish/English) 1996. CODEN: GRACAN. ISSN: 0017-3495. Publisher: Instituto de la Grasa y sus Derivados.

AB The new dual-phase decanter does not require any addition of water to process **olive** **paste** and produces very limited quantities of vegetable water. Consequently, the elimination of big waste water problem makes particularly interesting this technol. innovation. Therefore, to evaluate, in comparison with the traditional decanter its effectiveness in relation to the quali-quant. composition of natural antioxidants, tocopherols and **phenolic** compds. were determined on samples of virgin **olive** oils obtained by centrifugal decanters at 2 and 3 phases. Particularly, **phenolic** substances were analyzed by colorimetric, HPLC and HRGC methods. Thus, oils extracted by dual-phase decanter had higher concns. of tocopherols and phenols, especially o-diphenols, and showed higher stability to oxidation. The resistance to oxidation appeared better correlated with the content of simple and linked o-diphenols and of aglycon of de-carbomethoxy ligstroside.

→ L6 ANSWER 35 OF 69 CAPLUS COPYRIGHT 2003 ACS

1996:720770 Document No. 126:18038 The influence of **olive** **paste** preparation techniques on the quality of **olive** oil. Note I. Qualitative and quantitative HPLC profile of **phenolic** substances in virgin **olive** oil from the cultivar Ogliarola Salentina. Alloggio, V.; Caponio, F.; De Leonardis, T. (Istituto Di Industrie Agrarie, Università Degli Studi, Bari, Italy). Rivista Italiana delle Sostanze Grasse, 73(8), 355-360 (Italian) 1996. CODEN: RISGAD. ISSN: 0035-6808. Publisher: Stazione Sperimentale per le Industrie degli Oli e dei Grassi.

AB A comparative examination of systems used for **olive** **paste** preparation was made on samples of virgin oil extracted from drupes of the Ogliarola Salentina cultivar and showed considerable qual. and quant. differences in the composition of phenols. In particular, hammer crushers had a greater phenol extraction capacity than the traditional stone mills. In all

cases, the kneading process led to a reduction of the total phenol content. A direct relationship was evident between oxidative stability and the phenol content. The anal. of **phenolic** substances was preformed by HPLC and showed that greater amts. of an unidentified fraction and of hydroxytyrosol were present in the oils extracted from hammer-crushed olives than in the oils from milled olives. By contrast, greater amts. of known **phenolic** substances, mainly tyrosol and oleuropein, were present in oils extracted from milled olives, especially when kneaded.

L6 ANSWER 36 OF 69 CAPLUS COPYRIGHT 2003 ACS

1996:708157 Document No. 126:6795 Effects of Talc Addition and Operating Mode on the Quality and Oxidative Stability of Virgin **Olive** Oils Obtained by Centrifugation. Cert, Arturo; Alba, Jose; Leon-Camacho, Manuel; Moreda, Wenceslao; Perez-Camino, M. Carmen (Instituto de la Grasa, Seville, E-41012, Spain). Journal of Agricultural and Food Chemistry, 44(12), 3930-3934 (English) 1996. CODEN: JAFCAU. ISSN: 0021-8561. Publisher: American Chemical Society.

AB Continuous centrifugation, a widely used procedure for extraction of virgin **olive** oil, involves crushing olives, mixing the **olive** **paste**, and centrifugation with or without water addition ("three phase" or "two phase" modes, resp.). Virgin **olive** oils were obtained following both procedures, with and without talc addition. Acidity value, peroxide index, UV absorption at 270 and 232 nm, glyceridic polar compds., oxidized triglycerides, diglycerides, iron, copper, tocopherols, **phenolic** compds., and oxidative stability were determined and the results statistically analyzed. The talc addition gave rise to a small increase in the oil stability and a slight decrease in oxidized triglyceride levels. The oils obtained by the "two phase" mode showed a greater concentration of **phenolic** compds. than the homologous oils obtained by the "three phase" mode. Oils processed by the "three phase" mode showed a significant correlation between their stability and their **phenolic** concentration

L6 ANSWER 37 OF 69 CAPLUS COPYRIGHT 2003 ACS

1996:413791 Chemical and biological pretreatments of **olive** mill wastewaters: Benitez, F. Javier; Beltran-Heredia, Jesus; Acero, Juan L.; Cercas, Valentin (Departamento de Ingenieria Quimica y Energetica, Universidad de Extremadura, Badajoz, 06071, Spain). Book of Abstracts, 212th ACS National Meeting, Orlando, FL, August 25-29, ENVR-103. American Chemical Society: Washington, D. C. (English) 1996. CODEN: 63BFAF.

AB The decomposition of the organic matter present in the **Olive** Mill Wastewaters (OMW) by ozonation and by aerobic biodegrdn. has been investigated. In the chem. oxidation by ozone, expts. varying temperature, pH and ozone partial pressure were conducted. The evolution of the organic matter degradation was followed by measuring the COD (COD) and the total aromatic and **phenolic** contents. An approx. kinetic study which supposes that the COD removal follows a pseudo-first order reaction, is developed. The application of this model provides the apparent kinetic consts. In the aerobic biodegrdn., the expts. were carried out modifying initially the COD and the volatile suspended **solids** (VSS). The evolution of the process was followed by measuring the COD, VSS and total aromatic and **phenolic** contents. The kinetic study was performed by using the Contois model which leads to the evaluation of the kinetic parameters for the substrate utilization rate.

L6 ANSWER 38 OF 69 CAPLUS COPYRIGHT 2003 ACS

1995:997032 Document No. 124:91738 Production of spherical activated carbon. (Braeutigam, Joerg, Germany). Ger. DE 4416576 C1 19951109, 7 pp. (German). CODEN: GWXXAW. APPLICATION: DE 1994-4416576 19940511.

AB Manufacture of spherical activated C includes mixing of (1) ground raw materials (e.g., corn cobs, nut shells, fruit pits, especially **olive** pits) with a **particle** size of 10-500 μ m 10-95 weight% (charge

weight basis) impregnated with a 2-4 weight% aqueous Li salt solution to absorb 60-90 weight% salt (raw material basis), (2) coal powder 10-80 μm diameter 10-95 weight% (charge weight basis), optionally (3) cellulose fibers (from sawdust) with a **particle** size of 20-300 μm 3-15 weight% (charge weight basis) impregnated with the aqueous Li salt solution to absorb 300-450 weight% salt (raw material basis), and (4) **phenolic** resin binder 5-30 weight% (charge weight basis). The resulting mixture is shaped to form spheres 0.3-10 mm diameter which are dried, hardened, carbonized at 300-650°, and activated with CO₂ and/or steam at 500-950°. The resulting activated C has high abrasion resistance and compressive strength and is especially suitable for removal of pollutants from liqs. (e.g., drinking water, wastewaters) and gases.

L6 ANSWER 39 OF 69 CAPLUS COPYRIGHT 2003 ACS

1995:677257 Document No. 123:66870 Preparation of stable aqueous emulsions of water-insoluble **particles**. Fillipova, Irina V. (RTD Corp., USA). U.S. US 5393461 A 19950228, 6 pp. (English). CODEN: USXXAM. APPLICATION: US 1993-131448 19931004.

AB The preparation of emulsions of H₂O-insol. **particles** useful in the cosmetic, pharmaceutical, paint, and ink industries comprises: treating the H₂O-insol. **particles** with a wetting agent in an organic solvent; combining the H₂O-insol. **particles** with an oily or polymeric substance to obtain an oily suspension; preparing an aqueous solution of a combination of surface-active agents; and combining the aqueous solution with the oily suspension to form an emulsion.

L6 ANSWER 40 OF 69 CAPLUS COPYRIGHT 2003 ACS

1995:624720 Document No. 123:168068 Rapid extraction and determination of phenols in extra virgin **olive** oil. Favati, F.; Caporale, G.; Monteleone, E.; Bertuccioli, M. (Dipartimento di Biologia, Difesa e Biotecnologie Agro-Forestali, Universita degli Studi della Basilicata, Potenza, 85100, Italy). Developments in Food Science, 37A, 429-52 (English) 1995. CODEN: DFSCDX. ISSN: 0167-4501.

AB **Solid** Phase Extraction (SPE) was utilized as an alternative technique for the rapid recovery of the **phenolic** fraction from virgin **olive** oil. Different kinds of sorbent materials (C18, CN and Florisil) were tested and the validity of the SPE methodol. was tested against two commonly utilized phenol extraction techniques. Statistical anal. of the anal. data showed that SPE can represent a reliable alternative to the traditional procedures. SPE with CN columns was also utilized as an enrichment technique for the HPLC anal. of the **phenolic** fraction in 12 virgin **olive** oils coming from Greece, Italy and Spain. Eleven unidentified peaks were found to be always present in the chromatograms of the 12 oils. The relationships between these peaks and the total phenol content, the oil oxidative stability and some of the perceived properties of the virgin **olive** oil flavor (bitter and astringent) were statistically evaluated.

L6 ANSWER 41 OF 69 CAPLUS COPYRIGHT 2003 ACS

1995:624409 Document No. 123:167863 Rapid method for the isolation of **phenolic** compounds from virgin **olive** oil using **solid** phase extraction.. Papadopoulos, G. K.; Tsimidou, Maria (Laboratory Food Chemistry and Technology, University Thessaloniki, 54006, Greece). Bulletin de Liaison - Groupe Polyphenols, 16(Pt. 2), 192-6 (English) 1992. CODEN: BLPLAS. ISSN: 0242-8466. Publisher: Groupe Polyphenols.

AB The objective was to develop a rapid and reproducible method for the isolation of phenols, prior to HPLC anal. **Solid** phase extraction of phenols is carried out using laboratory-packed cartridges filled with PVP and

com. C18 RP cartridges.

L6 ANSWER 42 OF 69 CAPLUS COPYRIGHT 2003 ACS

1995:595045 Document No. 123:141999 High-performance liquid chromatography of **phenolic** compounds in virgin **olive** oils using amperometric detection. Mannino, S.; Cosio, M.S.; Bertuccioli, M. (Dipartimento di Scienze e Tecnologie Alimentari e Microbiologiche, Universita degli Studi di Milano, Milan, 20133, Italy). Italian Journal of Food Science (Spec. Issue), 150-7 (English) 1995. CODEN: ITFSEY. ISSN: 1120-1770.

AB A simple and reproducible method for the quant. determination of **phenolic** compds. in virgin **olive** oils was developed. Following **solid**-phase-extraction with a C18 Bond Elut cartridge and reversed-phase HPLC, these compds. were detected amperometrically using a dual electrode detector in the parallel configuration, operating at +0.5 and 1.0 V vs. Ag/AgCl. Virgin **olive** oils of different origin and cultivars and obtained using various techniques were analyzed. Consistent recoveries over 95% were achieved from spiked samples, and the detection limit was in the order of 2 ppb. The method is easy to perform, and it can be used for large-scale routine anal.

L6 ANSWER 43 OF 69 CAPLUS COPYRIGHT 2003 ACS

1995:560848 Document No. 122:321551 Correlated effects during the bioconversion of waste **olive** waters by *Lentinus edodes*. Vinciguerra, Vittorio; D'Annibale, Alessandro; Delle Monache, Giuliano; Giovannozzi Sermanni, Giovanni (Agrobiology and Agrochemistry Department, University of Tuscia, Viterbo, 01100, Italy). Bioresource Technology, 51(2 & 3), 221-6 (English) 1995. CODEN: BIRTEB. ISSN: 0960-8524. Publisher: Elsevier.

AB Waste-**olive**-waters from the **solid**-liquid processing system were degraded in the liquid cultures of white-rot fungus *Lentinus edodes*. About 45% of biodecoloration and 75% of total organic C reduction were achieved <4 days. Over the same period, the content of total phenols was reduced by 66%. The release of exo-enzymes involved in the metabolism of **phenolic** compds. (phenol-oxidases and Mn-peroxidase) was greatly enhanced with respect to the control. A highly-significant correlation was observed between decolorization, total organic C and total phenols.

L6 ANSWER 44 OF 69 CAPLUS COPYRIGHT 2003 ACS

1994:529065 Document No. 121:129065 Extraction, purification procedures and HPLC-RI analysis of carbohydrates in **olive** (*Olea europaea* L.) plants. Romani, A.; Baldi, A.; Tattini, M.; Vincieri, F. F. (Dipartimento di Scienze Farmaceutiche, Universita' degli Studi, Florence, 50100, Italy). Chromatographia, 39(1-2), 35-9 (English) 1994. CODEN: CHRGB7. ISSN: 0009-5893.

AB Qual. and quant. analyses of carbohydrates in **olive** (*Olea europaea* L.) tissues have been carried out by HPLC-RI. Sample purification was by two successive **solid**-liquid extraction to remove completely plant **phenolics** and pigments. Five carbohydrate peaks; sucrose (stachyose + raffinose + sucrose), glucose, galactose, fructose (fructose + myo-inositol) and mannitol were detected when plant exts. were run on a Sugar SC 1011 column operating at 75 °C, using water as eluent 0.5 mL min⁻¹. The use of two serial Sugar SC 1011 columns operating at 90°C and eluting the plant exts. with H₂O-CH₃CN (95/5 volume/volume) enables identification and quantification of nine carbohydrates, including tetra and tri-saccharides.

L6 ANSWER 45 OF 69 CAPLUS COPYRIGHT 2003 ACS

1994:516712 Document No. 121:116712 Polluting characteristics and lime precipitation of **olive** mill wastewater. Lolos, G.; Skordilis, A.; Parissakis, G. (Lab. Inorganic and Analytical Chem., Natl. Technical Univ. Athens, Greece). Journal of Environmental Science and Health, Part A: Environmental Science and Engineering, A29(7), 1349-56 (English) 1994.

AB This paper mainly concs. on the polluting characteristics and lime precipitation

as a minimal pretreatment procedure for the removal of organic matter content. The sludge produced of the addition of 0.5-3% CaO reduces the concentration of suspended **solids** in the vegetation waters by 27.6% whereas 77.15 of the oil and grease are distributed in the precipitate fraction.

The COD as well as the toxic load in terms of **phenolic** compds. are not strongly affected by the addition of CaO.

L6 ANSWER 46 OF 69 CAPLUS COPYRIGHT 2003 ACS

1994:481193 Document No. 121:81193 High-performance liquid chromatography of **phenolic** compounds in virgin **olive** oils using amperometric detection. Mannino, S.; Cosio, M. S.; Bertuccioli, M. (Dip. di Sci. e Tecnol. Aliment. e Microbiol., Univ. degli Stud. di Milano, Milan, 20133, Italy). Italian Journal of Food Science, 5(4), 363-70 (English) 1993. CODEN: ITFSEY. ISSN: 1120-1770.

AB A simple and reproducible method for the quant. determination of **phenolic** compds. in virgin **olive** oils has been developed. Following **solid**-phase-extraction with a C18 Bond Elut cartridge and reverse-phase HPLC, these compds. were detected amperometrically using a dual electrode detector in the parallel configuration operating at +0.5 and 1.0 V vs. Ag/AgCl. Virgin **olive** oils of different origin and cultivars and obtained using various techniques were analyzed. Consistent recoveries of over 95% were achieved from spiked samples and the detection limit was in the order of 2 ppb. The method is easy to perform and can be used for large scale routine anal.

L6 ANSWER 47 OF 69 CAPLUS COPYRIGHT 2003 ACS

1994:433230 Document No. 121:33230 comparison of anaerobic filter and anaerobic contact process for **olive** mill wastewater previously fermented with Geotrichum candidum. Borja, R.; Gonzalez, A. (Inst. Grasa Derivados, CSIC, Seville, E-41012, Spain). Process Biochemistry (Oxford, United Kingdom), 29(2), 139-44 (English) 1994. CODEN: PBCHE5. ISSN: 1359-5113.

AB During the anaerobic digestion of **olive** mill wastewater (OMW) prefermented by aerobic growth with Geotrichum candidum, a steady state was reached more quickly with the anaerobic contact process than with an anaerobic filter. The daily methane production and COD removal recorded with the anaerobic filter were greater than those obtained in the anaerobic contact reactor. The anaerobic filter yielded a biogas with a higher percentage of methane, and effluent with a lower volatile fatty acid and volatile **solid** (VS) content than the anaerobic contact reactor. The immobilization of VS in an anaerobic filter fermenter is a means of reducing the inhibition of methanogenic bacteria by the residual **phenolic** compds. present in prefermented OMW. A yield of 0.18 and 0.34 L methane/g COD added was obtained with the anaerobic contact and anaerobic filter reactors, resp. Addnl. advantages of fixed film over contact fermenters include the elimination of mech. mixing and sludge settling and return.

L6 ANSWER 48 OF 69 CAPLUS COPYRIGHT 2003 ACS

1993:433593 Document No. 119:33593 Treatment of detoxified **olive** mill wastewaters by anaerobic filter and aerobic fluidized bed processes. Hamdi, M.; Ellouz, R. (Dep. Biochem. Food Eng., INSA, Toulouse, 31077, Fr.). Environmental Technology, 14(2), 183-8 (English) 1993. CODEN: ENVTEV. ISSN: 0959-3330.

AB An anaerobic filter (AF) was compared with an aerobic fluidized bed fermentor (AFBF) for treatment of **olive** mill wastewater detoxified by Aspergillus niger. Operation of an AFBF is more difficult than an AF. The AFBF removed 57% of total COD after elimination of total suspended **solids** (TSS) which correspond to sludge. Treatment of

detoxified **olive** mill wastewater by AF reduced total COD and soluble COD by 67% and 68.1%, resp. Regarding the double role of AF, phys. retention and anaerobic mineralization, TSS reduction was 62.9%. An AFBF is less economic than an AF due to consumption of aeration energy and high production of secondary sludge. Moreover, an AF produces biogas at 80% CH₄. The black color of **olive** mill wastewater is weakly reduced only by AF.

L6 ANSWER 49 OF 69 CAPLUS COPYRIGHT 2003 ACS

1993:433585 Document No. 119:33585 Integrated biological process for **olive** mill wastewater treatment. Hamdi, M.; Garcia, J. L.; Ellouz, R. (Cent. Biotechnol. Sfax, Sfax, 3038, Tunisia). Bioprocess Engineering, 8(1-2), 79-84 (English) 1992. CODEN: BIENEU. ISSN: 0178-515X.

AB The biol. process for **olive** mill wastewater (OMW) treatment is based on an aerobic detoxification followed by methanization and aerobic posttreatment. The first aerobic detoxification step of OMW (supplemented with SO₄²⁻ and NH₄⁺) was carried out by the growth of *Aspergillus niger* in a bubble column. This step decreased OMW toxicity and increased its biodegradability because of **phenolic** compound degradation. The growth of *A. niger* resulted in 58% COD removal, with production of biomass containing

30% proteins (weight/weight). Filtration of OMW was enhanced by this fermentation because

the suspended **solids** were trapped in the mycelium. The filtrate liquid was then methanized using an anaerobic filter packed with Flocor. This reactor showed a short start up and a good stability. The COD removal was approx. 60%, and the CH₄ yield (1 CH₄/g COD removed) was close to the theor. yield. The anaerobic filter effluent was treated in an activated sludge fluidized reactor containing **olive** husk as a packing material. The husks were maintained in fluidization state by the aeration. This step induces COD removal of 45% and sludge (up to 2 g/dm³). The entire process allowed a global COD reduction of ≤90%; however, the black color due to polyphenolic compds. with high mol. weight persisted.

L6 ANSWER 50 OF 69 CAPLUS COPYRIGHT 2003 ACS

1993:131117 Document No. 118:131117 Toxicity and biodegradability of **olive** mill wastewaters in batch anaerobic digestion. Hamdi, Moktar (Cent. Biotechnol., Sfax, 3038, Tunisia). Applied Biochemistry and Biotechnology, 37(2), 155-63 (English) 1992. CODEN: ABIBDL. ISSN: 0273-2289.

AB Anaerobic biodegradability and toxicity of **olive** mill wastewaters (OMW) were studied in batch anaerobic digestion expts. In anaerobic digestion of OMW or the supernatant of its centrifugation, CH₄ production was achieved at ≤5-15% (V/V) dilution corresponding to only 5-20 g/L COD. Washed suspended **solids** of OMW were toxic at ≤80 g/L COD; however, biodegradability kinetics of OMW or supernatant was faster than for suspended **solids**, which are mainly cellulose and lignin. Darkly colored polyphenols cause problems for the biodegrdn. of OMW, whereas long chain fatty acids, tannins, and simple **phenolic** compds. are responsible for its toxicity to methanogenic bacteria.

L6 ANSWER 51 OF 69 CAPLUS COPYRIGHT 2003 ACS

1992:234192 Document No. 116:234192 Utilization of a yeast pectinase in **olive** oil extraction and red wine making processes. Servili, Maurizio; Begliomini, Alberto L.; Montedoro, Gianfrancesco; Petruccioli, Maurizio; Federici, Federico (Ist. Ind. Agrarie, Univ. Perugia, Perugia, I-06100, Italy). Journal of the Science of Food and Agriculture, 58(2); 253-60 (English) 1992. CODEN: JSFAAE. ISSN: 0022-5142.

AB The possibility of using an endo-polygalacturonase produced by *Cryptococcus albidus albidus* (yeast pectinase) in the mech. **olive**

oil extraction process and in the production of red wine was investigated. Compared with the control and **olive** pastes treated with a com. enzyme preparation, an increase in oil yield was achieved by treatment with the yeast preparation. Also, the finished oil quality (turbidity, oxidation induction

time, chlorophyll, and the content of polyphenols and aroma compds.) was generally better. Treatment of red musts with yeast pectinase resulted in an improved aroma profile in the wines, even in the absence of an increase in color intensity. Moreover, the use of the yeast pectinase did not cause any particular increase in the MeOH content of the finished wines.

L6 ANSWER 52 OF 69 CAPLUS COPYRIGHT 2003 ACS

1992:158154 Document No. 116:158154 Comparison between anaerobic filter and anaerobic contact process for fermented **olive** mill wastewaters.

Hamdi, M.; Garcia, J. L. (Lab. Microbiol., Univ. Provence, Marseille, F-13331, Fr.). Bioresource Technology, 38(1), 23-9 (English) 1991.

CODEN: BIRTEB. ISSN: 0960-8524.

AB During the anaerobic digestion of **olive** mill wastewater (OMW) with *Aspergillus niger*, a stationary state was reached more quickly with the anaerobic contact process than with an anaerobic filter, but was more stable with the anaerobic filter. The daily CH₄ production and COD removal in the anaerobic filter were greater than those in the anaerobic contact reactor. The anaerobic filter yielded a biogas with a higher percentage of CH₄ and an effluent with lower volatile fatty acids and volatile **solids** than the anaerobic contact process. The immobilization of volatile **solids** in an anaerobic filter fermenter is a means of reducing the inhibition of methanogenic bacteria by the residual **phenolic** compds. in prefermented OMW. A yield of 0.15 and 0.33 L CH₄/g COD removed was obtained with the anaerobic contact and anaerobic filter reactors, resp. Addnl. advantages of the fixed film over contact fermenters include the elimination of mech. mixing and sludge settling and return.

L6 ANSWER 53 OF 69 CAPLUS COPYRIGHT 2003 ACS

1990:120044 Document No. 112:120044 Impact-resistant blends of thermoplastics and graft polymers. Bueschl, Rainer; Echte, Adolf; Schulte, Konrad; Mittnacht, Hans (BASF A.-G., Fed. Rep. Ger.). Eur. Pat. Appl. EP 335235 A2 19891004, 11 pp. DESIGNATED STATES: R: DE, ES, FR, GB, IT, NL. (German). CODEN: EPXXDW. APPLICATION: EP 1989-105092 19890322. PRIORITY: DE 1988-3811014 19880331.

AB Molding compns. with good resistance to impact and stress cracking contain 55-80% hard matrix from ≥95% vinylarom. compound and 0.1-5% monomer RC(X):CH₂ (R = H, Me; X = alkoxy, carboalkoxy, carbamoyl group), and 45-20% graft polymer (average **particle** size 3.5-9 μm) from these monomers and an elastomer. Stirring polybutadiene 152, styrene 1736, methacrylamide (I) 0.5, **phenolic** stabilizer 1.9, and tert-Cl₂H₂5SH 0.95 part at 123° until the conversion was 35% and continuing polymerization in an aqueous suspension to >99% conversion gave a

blend

(average **particle** size 5.5 μm) with relative stress-cracking corrosion 41 in **olive** oil-oleic acid and 92 in chlorofluorocarbon, adhesion to polyurethane foam good, and melt index (200°, 5 kg) 4.8 g/10 min; vs. 37, 90, poor, and 4.8, resp., without I.

L6 ANSWER 54 OF 69 CAPLUS COPYRIGHT 2003 ACS

1987:215138 Document No. 106:215138 Bonding agents containing natural polyphenolics. Swann, David Allan; Evers, Michael John; Weaver, Eric Raymond (N. Z. Forest Products Ltd., N. Z.). Pat. Specif. (Aust.) AU 552541 B2 19860605, 24 pp. (English). CODEN: ALXXAP. APPLICATION: AU 1981-74214 19810814.

AB Adhesives useful for composite materials such as plywood are prepared by using ≥1 natural polyphenolic material extracted from *Pinus radiata*

bark and ≥ 1 acid-treated phenol-aldehyde condensation product. A mixture containing water 112, hydroxyethyl cellulose 0.42, and phenol-aldehyde resol (**solids** content 42%, pH 11.8) 60 parts was treated with 2M H₂SO₄ until a dispersion with pH 8.9 was obtained. A Tannaphan (powdered extract from *P. radiata* bark)-based adhesive containing the dispersion 18.3, water 10.2, paraformaldehyde 1.3, and **olive** stone flour 3.6 parts was used at 200 g/m² in manufacture of a 5-ply plywood with satisfactory gluelines.

L6 ANSWER 55 OF 69 CAPLUS COPYRIGHT 2003 ACS

1986:59457 Document No. 104:59457 Thermal-transfer recording material. Nakamura, Masaki; Abe, Takao; Koshizuka, Kunihiro; Kitamura, Shigehiro; Ishii, Fumio; Hotta, Yuji (Konishiroku Photo Industry Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 60137691 A2 19850722 Showa, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1983-244267 19831226.

AB The title material has a color layer containing a heat-fusible substance on one side of a film substrate and a backing layer containing a crosslinkable resin and a heat-fusible substance that is **solid** or semisolid at room temperature on the other side, and optionally the crosslinkable resin is a heat-resistant resin selected from urea resins, melamine resins, polyamide resins, alkyd resins, epoxy resins, furan resins, silicone resins, **phenolic** resins, and resorcinol resins. The material has reduced sticking to a thermal head and decreased blocking during storage. Thus, a 6- μ thick poly(ethylene terephthalate) film support was coated with a mixture of an epoxy resin (Epikote 801), beeswax, diethylenetriamine, and EtCOMe to form a backing layer and coated on the other side with another mixture of carnauba wax, a wax (Nisseki micro Wax 155), **olive** oil, and C black to form a color layer to give a thermal-transfer recording sheet having reduced sticking to the thermal head and decreased blocking in storage as compared to that prepared by using a mixture of cellulose acetate propionate, lecithin, and a PhMe-EtCOMe-2-propanol mixed solvent instead of the above mixture for the backing layer.

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1984:202280 Document No. 100:202280 Needle-shaped ferromagnetic metal **particles** consisting essentially of iron. Steck, Werner; Rudolf, Peter; Sarnecki, Wilhelm; Loeser, Werner; Kovacs, Jenoe; Jakusch, Helmut (BASF A.-G., Fed. Rep. Ger.). Ger. Offen. DE 3228669 A1 19840202, 21 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1982-3228669 19820731.

AB Fe-based alloy needles for magnetic recordings with high coercive forces are prepared by surface treating FeOOH or Fe₂O₃.nH₂O powders with form-stabilizing compns. such as chelates and then reducing it 1st with an organic compound in inert gas at 270-650° and then in H₂ at 270-450° or in H₂ and an organic compound mixture at 270-450°. Thus, FeOOH needles were treated with H₃PO₄ and oxalic acid, separated, dried, and reduced in a H₂ flow with stearic acid at 350° for 8 h to give iron needles of coercive force 66.6 kA/m.

L6 ANSWER 57 OF 69 CAPLUS COPYRIGHT 2003 ACS

1983:214315 Document No. 98:214315 Antioxidant activity of **phenolic** extracts from vegetation waters of olives. Camurati, F.; Fedeli, E. (Staz. Sper. Ind. Oli e Dei Grassi, Milan, Italy). Rivista Italiana delle Sostanze Grasse, 59(12), 623-6 (Italian) 1982. CODEN: RISGAD. ISSN: 0035-6808.

AB Three solvents (EtOH [141-78-6], iso-Pr₂O [108-20-3], and BuOAc [123-86-4]) were tested for the extraction of polyphenols from vegetation water, a by-product of **olive** pressing. EtOAc gave the highest polyphenol yield. The antioxidant activity of the polyphenols was tested on β -carotene [7235-40-7] and on sunflower oil (Gasparoli, A. and Fedeli, E., 1979). The BuOAc-extracted polyphenols were more active than those extracted with the other 2 solvents. At 0.05%, the BuOAc-extracted polyphenols were at par with 0.03% BHT, concerning the antioxidant activity.

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1978:188396 Document No. 88:188396 The polyphenols of olives and **olive** oil. Part 3. Effects of temperature and kneading time on the oil polyphenol content. Solinas, M.; Di Giovacchino, L.; Mascolo, A. (Ist. Sper. Elaiotec., Pescara, Italy). Rivista Italiana delle Sostanze Grasse, 55(1), 19-23 (Italian) 1978. CODEN: RISGAD. ISSN: 0035-6808.

AB The effect of temperature and kneading time on polyphenol content of **olive** oil produced in oil milling by expression was examined. Olives of variety Coratina (just ripe), Ogliarola di Bitonti (ripe), and Cellina di Nardo (overripes and fallen) are processed at various kneading times (0, 30, and 60 min) and temps. (18 and 30°). Total polyphenols and their constituents were measured. The nature and quality of olives correspond, in the oils, to a high content of **phenolic** constituents. As regards kneading operations, an increase in temperature increased the polyphenol content in the oils, whereas kneading time extension caused a decrease. The calcn. of partition coeffs. of polyphenols between oil and ground **olive paste** yielded information for process control.

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1973:98566 Document No. 78:98566 Spray condensation process for encapsulating finely divided substances in a liquid medium. Speiser, Peter; Merkle, Hans Peter; Schibler, Luzius (Ciba-Geigy A.-G.). Ger. Offen. DE 2233428 19730125, 52 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1972-2233428 19720707.

AB Finely divided substances were spray dried as a dispersion in a liquid medium containing a surface-active reactive aminoplast or **phenolic** precondensate so that the precondensate spontaneously polymerized and encapsulated the substance during the spray drying. Thus, an aqueous homogeneous suspension containing Me cellulose (I) and 5-allyl-5-isobutylbarbituric acid (II) of average **particle** size <20 μ was mixed with a triethanolamine-modified poly(ethylene glycol)-urea-HCHO condensate (III) as an aqueous solution and the resulting suspension acidified to pH 2.5. This suspension was spray dried using an air stream of 200.deg. at the intake and 100-5.deg. at the outlet to give flowable powder containing II as the core and I containing I as the capsule wall which did not allow the core to be removed from the capsule after extended aqueous elution. Fourteen other examples were given with dyes, fillers, adhesives, and oils as the core.

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1972:111765 Document No. 76:111765 Migration of plastics-processing adjuvant substances from films into liquid and **solid** fats and simulants. IX. Results of previous extraction and migration studies. Vom Bruck, C. G.; Figge, K.; Piater, H.; Wolf, V. (Unilever Forschungslab., Hamburg, Fed. Rep. Ger.). Deutsche Lebensmittel-Rundschau, 67(12), 444-50 (German) 1971. CODEN: DLRUAJ. ISSN: 0012-0413.

AB The migration of additives from high-d. polyethylene (I), low-d. polyethylene (II), polyvinyl chloride (III), and polystyrene (IV) into 4 edible oil and fats, 5 synthetic glycerides, and 4 organic solvents was studied. 4C-labeled additives were added: **phenolic** antioxidants Ionox 330 for all plastics, lubricant stearic acid amide for I and II, organo-tin stabilizer Advastab for III and Bu stearate for IV. The migration values of an additive from plastic films into sunflower oil, **olive** oil, Biskin, and margarine are approx. equal. The amts. of additive migrating from various plastics into a given oil or fat are different. A mixture of medium chain triglycerides was chosen to serve as fat simulation under migration for I and II, the same chain, paraffin oil, MeOH for IV, and tricarpin, or a mixture of hydrogenated, cyclic fatty acid triglycerides for III. Paraffin oil or heptane were suitable simulations under extraction conditions for III, coconut oil for IV. These simulations

used for I and II gave extraction values which were too high.

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1970:456895 Document No. 73:56895 Forming poly(vinyl chloride) gaskets in phenol- or urea-formaldehyde resin closure caps. Samuel, David N.; Lightfoot, David R. (Grace, W. R. and Co.). Brit. GB 1196543 19700624, 10 pp. (English). CODEN: BRXXAA. APPLICATION: GB 19680209.

AB The title gasket material, containing metal, alloy, or graphite elec. inductive **particles**, is placed inside plastic closure caps and heated in a rapidly alternating magnetic field to give a lining with a desired profile. Thus, a Ni-Fe alloy powder was stirred into a poly(vinyl chloride) plastisol containing diisooctyl phthalate and epoxidized soybean oil, and the mixture was used to line caps of phenol-HCHO resin. The caps were spun to spread the lining composition into a film and the film was fluxed and heated. Specimen linings removed from the caps were resistant to water, shampoo, disinfectants, cottonseed oil, **olive** oil, and epoxidized soybean oil.

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1964:45593 Document No. 60:45593 Original Reference No. 60:7981f-h,7982a-c A convenient synthesis of isoflavones and di-O-methylangelensin by aryl migration. Grover, S. K.; Jain, A. C.; Seshadri, T. R. (Univ. Delhi). Indian J. Chem., 1(12), 517-20 (Unavailable) 1963.

AB Isoflavones and di-O-methylangelensin were synthesized in good yields by subjecting chalcone epoxides to aryl migration with BF₃-etherate [Grisebach, cf. Ollis, Recent Developments in the Chemistry of Natural **Phenolic** Compounds, 1961, p. 69 (CA 57, 7168a)]. Thus, 1 g. 2',4,4'-trimethoxychalcone epoxide (I) in 20 ml. dry C₆H₆ was treated dropwise at 0° with 1 ml. BF₃ etherate, the mixture shaken 20 min. at room temperature, 100 ml. Et₂O and 50 ml. H₂O added, and the organic layer

evaporated

to dryness in vacuo to give 0.8 g. of the corresponding

α-formyldeoxybenzoin (II), orange **solid, olive**

-green with alc. FeCl₃, soluble in aqueous NaOH. A solution of II in 50 ml.

C₆H₆

was refluxed 18 hrs. with 20 g. anhydrous AlCl₃, C₆H₆ distilled, the complex decomposed with ice-HCl, the product extracted with ether, the extract

extracted with

Na₂CO₃, and the alkaline solution acidified and reextd. with ether.

Acetylation

of the Et₂O residue with Ac₂O and C₅H₅N gave 4',7-diacetoxyisoflavone, m. 188-9° (EtOH), which, deacetylated with alc. HCl, gave 50 mg.

daidzein, m. 315° (EtOH). 2'-Hydroxy-4'-benzyloxy-4-

methoxychalcone (12 g.) was refluxed with 7.6 ml. PhCH₂Cl, 2 g. NaI, and 25 g. K₂CO₃ in 350 ml. Me₂CO until there was no FeCl₃ reaction. Work up

gave 12 g. 4-methoxy-2',4'-dibenzyloxychalcone (III), m. 121-2°. A solution of 1.1 g. III in 15 ml. Me₂CO was treated with a mixture of 1 ml. 30% H₂O₂, 1.25 ml. 8% aqueous NaOH, and 2.5 ml. MeOH, the mixture shaken 1 hr., during which it was heated to boiling and allowed to cool at intervals of 15 min. Dilution with H₂O and cooling gave 1 g. epoxide (IV), m.

131-2° (EtOAc-EtOH). Rearrangement Of 1 g. IV with 0.9 ml. BF₃

etherate in 20 ml. C₆H₆ (as for II) gave the corresponding

α-formyldeoxybenzoin (V), which was heated 1.5 hrs. on a boiling

water bath with 20 ml. HOAc and 15 ml. HCl and worked up to give 0.25 g.

formononetin (VI), m. 254-5° (MeOH). Alternatively, a solution of V

in MeOH was saturated with H in the presence of 1 g. 5% Pd-C at atmospheric

pressure.

Work up gave 0.25 g. VI. A mixture of 4.8 g. 2-hydroxy-4-

benzyloxyacetophenone, 3.8 g. piperonal, and 60 ml. EtOH and aqueous KOH (5.6 g. in 6 ml. H₂O) was heated on a boiling water bath to dissoln. The mixture was kept at room temperature 24 hrs., diluted with H₂O, and acidified and the product filtered off, macerated with NaHCO₃, and washed with H₂O to give 5 g. 2'-hydroxy-4'-benzyloxy-3,4-methylenedioxychalcone (VII), m.

174-5° (EtOH). VII gave a red FeCl₃ reaction, green with gallic acid and H₂SO₄. Benzoylation of 5 g. VII with 5 ml. PhCH₂Cl, 2 g. NaI, and 30 g. K₂CO₃ in 250 ml. Me₂CO (as for III) gave 5 g. 2',4'-dibenzoyloxy-3,4-methylenedioxychalcone (VIII), m. 97-8° (EtOH). VIII was converted into the epoxide, m. 158-9° (EtOAc-EtOH) and finally into the corresponding α -formyldeoxybenzoin (IX) (as for II) with BF₃ etherate. Debenzylation of IX with HOAc and HCl afforded pseudobaptigenin, m. 291-2° (EtOH); diacetate m. 175-6°. II (prepared from 1 g. I) in 35 ml. HOAc was treated with 0.8 g. 5% Pd-C, and the mixture stirred in H atmospheric at room temperature and pressure (70 ml.

H absorbed)

and worked up to give 0.25 g. di-O-methylangolensin, oil, negative FeCl₃ reaction, ν (CHCl₃) 1665, 1375, and 1030 cm.⁻¹

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1962:430077 Document No. 57:30077 Original Reference No. 57:6062i,6063a-c
Pigments from synthetic resins. Paikachev, Yu. S.; Frolov, S. S. Khim. Prom. 242-3 (Unavailable) 1962.

AB The preparation of phenol-H₂CO diazo pigments is described. A novolak resin prepared from an 1:0.7 (molar) phenol-H₂CO mixture was steam distilled, dried, and powdered to give a white powder, m.p. 75-80°, mol. weight 700-800, soluble in alcs., acetone, and alkalies. The powder was dissolved in MeOH, the solution cooled to 2-3°, and diazoaniline was added, together with NaOAc. A yellow, amorphous precipitate was formed, which was filtered and washed. Pigments of various colors were prepared by an analogous method from the resin and other diazo components (component and color given): nitroaniline, dark-brown; m-nitroaniline (I), yellow-to-brown; α -naphthylamine, brown; benzidine, olive-green; m-nitro-o-anisidine, light-brown; H acid, violet; Diazo Blue Z, dark-blue; Diazo Light Blue, gray-blue; and Diazo Green Zh, darkgreen. The same pigments were prepared by coupling in aqueous suspension in the presence of alizarin oil (as peptizing agent), but the process is difficult due to the swelling of the resin. The m.ps. of most of these pigments are 100-200°; only the pigment prepared from Diazo Blue Z does not melt. The colors of the pigments vary somewhat as a function of the resin:diazo component ratio used in their preparation. All these pigments are soluble or slightly soluble in alcs. and acetone, and most of them are soluble in alkalies.

Their d. is 1.0-1.1, and they are easily powdered to a **particle** size of 0.5 μ . Their heat resistance is increased by boiling in an 0.1N alkaline solution. The I-resin pigment was studied in more detail; its mol. weight is 1300-2000 and its color intensity is 10 times higher than that of the I-phenol pigment.

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1956:8549 Document No. 50:8549 Original Reference No. 50:1792a-i,1793a-c
Furochromones and -coumarins. IX. Reactions of khellol glucoside, visnagin, and bergapten. Schonberg, Alexander; Badran, Nasry; Starkowsky, Nicolas A. (Cairo Univ., Egypt). J. Am. Chem. Soc., 77, 1019-21 (Unavailable) 1955. CODEN: JACSAT. ISSN: 0002-7863.

AB cf. C.A. 49, 7562g. A method is described for the hydrolysis of khellol glucoside (I) and the subsequent transformation of khellol (II) to visnagin (III). The oxidation of II with CrO₃ yielded 6-formyl-7-hydroxy-2-hydroxymethyl-5-methoxychromone (IV) and that of bergapten (V) gave 6-formyl-7-hydroxy-5-methoxycoumarin (apoxanthoxyletin) (VI). 5,6,7-Trimethoxy-2-methylchromone (VII) can be obtained from III through the intermediate 6-formyl-7-hydroxy-5-methoxy-2-methylchromone (VIII). I (10 g.) in 15 cc. 60% HBr heated exactly 2 min. at 75°, the solution removed from the bath, shaken, kept a few min. at room temperature,

diluted with 200 cc. H₂O, basified with 10 aqueous Na₂CO₃, acidified with a little AcOH, boiled, filtered hot, and the filtrate cooled deposited

yielded 80% II, m. 179-80°. I treated 10-15 min. with hot HBr yielded 5-norkhellol, yellow prisms, m. 200° (from EtOH), giving a green color with FeCl₃. II (1 g.) treated with 3 cc. SOCl₂, the brown-green mixture stirred with a glass rod, the excess SOCl₂ evaporated at room temperature, and the solid residue washed with petr. ether, filtered, and crystallized from 50% EtOH with C yielded 75% 2-chloromethyl-5-methoxyfuro-4',5':6,7-chromone (IX), m. 140°, colorless needles. IX pulverized with KOH gave a deep green color turning violet-red on addition of a drop of EtOH. IX (1 g.) in 20 cc. glacial AcOH refluxed 3 hrs. with 2 g. Zn dust and 1 drop concentrated H₂SO₄, the mixture filtered, diluted with H₂O, and the colorless precipitate recrystd. from H₂O yielded III, m. 140-2°, oxidized with CrO₃ to the 2-Me analog (X) of IV. Finely powdered II (1 g.) stirred 2 min. with 20 cc. 25% H₂SO₄ and then with 20 cc. 10% aqueous K₂Cr₂O₇, the mixture allowed to stand 0.5 hr., filtered, and the filter cake recrystd. from dilute EtOH yielded 0.5 g. IV, colorless needles, m. 217°, giving a red FeCl₃ reaction and a yellow solution in dilute NaOH. A concentrated solution of IV in EtOH gave an orange precipitate with alc. p-C₆H₄(NH₂)₂ (XI). IV (0.5 g.) in 10 cc. glacial AcOH allowed to stand 10 min. with 0.4 g. PhNH₂ in 2.5 cc. AcOH, the mixture diluted with H₂O, and the orange precipitate recrystd. from EtOH yielded the anil of IV, orange solid, m. 233°, giving a red FeCl₃ reaction. IV (0.24 g.) in 10 cc. warm EtOH and 0.3 g. H₂NCONHNH₂.HCl and 0.4 g. NaOAc in 4 cc. H₂O heated to boiling and then cooled gave the semicarbazone of IV, m. above 280° (depending on the rate of heating), very sparingly soluble in H₂O and the usual organic solvents. IX oxidized in the usual manner with CrO₃ yielded the 2-ClCH₂ analog (XII) of IV, colorless needles, m. 175-7°, giving a red FeCl₃ reaction and a yellow solution with 4% aqueous NaOH; a concentrated alc. solution of XII gave an orange precipitate with alc. XI. XII (200 mg.) in 6 cc. glacial AcOH treated with 0.5 g. Zn dust, the mixture stirred 15 min. with a glass rod, filtered, and the filtrate diluted with H₂O, and neutralized with aqueous NaHCO₃ gave X, colorless crystals, m. 189°. XII (200 mg.) refluxed 4 hrs. with 50 cc. 1% alc. AgNO₃, the mixture filtered from the precipitated AgCl, and the filtrate concentrated on the water bath to a small volume and cooled deposited IV, colorless crystals, m. 215-17°. V (1 g.) in 30 cc. hot glacial AcOH and 15 cc. 30% aqueous Na₂Cr₂O₇ boiled gently 5 min., the mixture kept 5 hrs. at room temperature, diluted with H₂O to 200 cc., refrigerated overnight, and the yellowish needles filtered, washed with H₂O (0.6 g.), and recrystd. from EtOH yielded VI, m. 222-3°, giving a yellow solution in dilute aqueous NaOH, a red FeCl₃ reaction, a yellow color with concentrated H₂SO₄, and an orange deposit with alc. XI. VI (0.2 g.), 0.6 g. PhNHNH₂, 20 cc. AcOH, 0.4 g. NaOAc, and 2 cc. H₂O refluxed 20 min. and then cooled to 0° deposited the phenylhydrazone of VI, yellow crystals, m. 251° (from EtOH). 6-Formyl-5,7-dimethoxy-2-methylchromone (1 g.) in 100 cc. 20% H₂SO₄ kept 6 hrs. at room temperature with 5 cc. 30% aqueous H₂O₂ with occasional shaking, the mixture diluted with H₂O, cooled, and the crystalline deposit recrystd. from hot H₂O gave the 6-HO analog (XIII), colorless needles, m. 222-3° developing a brown color gradually with FeCl₃ and dissolving in both 4% aqueous NaOH and concentrated H₂SO₄ with yellow color. XIII (0.5 g.) refluxed 1.5 hrs. with 50 cc. 18% HCl, and the solution diluted with H₂O and cooled yielded 5,6-dihydroxy-7-methoxy-2-methylchromone, colorless crystals, m. 234°, giving a blue color changing to olive with alc. FeCl₃ and a deep red color with 1 drop 1% aqueous NaOH and 1 drop alc. FeCl₃. X (4 g.) in 30 cc. 4% aqueous NaOH treated with cooling with 10 cc. 30% H₂O₂, the mixture kept 6 hrs. with occasional shaking in ice, neutralized with AcOH, filtered, and the filter cake recrystd. from hot

H₂O yielded 6,7-dihydroxy-5-methoxy-2-methylchromone (XIV), colorless silky needles, m. 229°, and soluble in 4% aqueous NaOH and in concentrated H₂SO₄ with a yellow color, a greenish black color with FeCl₃, a deep red color with 1 drop each 1% aqueous NaOH and alc. FeCl₃, a yellow precipitate in EtOH with Pb(OAc)₂, and a red-brown deposit with aqueous TiCl₃. XIV (1 g.) demethylated in the usual manner yielded 5,6,7-trihydroxy-2-methylchromone, yellowish plates, m. 280-2°, giving a green-brown FeCl₃ reaction. XIV (1 g.) refluxed 8 hrs. with 80 cc. Me₂CO, 5 cc. MeI, and 5K₂CO₃, the solvent evaporated in vacuo, the residue acidified with dilute AcOH, extracted with CHCl₃, the CHCl₃ layer washed with 4% aqueous NaOH, evaporated to dryness, and the solid residue recrystd. from H₂O yielded VII, m. 100°, colorless prisms giving with KOH pellets the characteristic red color of 2-methylchromones having no free phenolic group. VII was soluble in 150 parts H₂O at 24° and in 10 parts at 70°. The alkaline washings from the preparation of VII acidified gave a small amount of XIII, m. 222°. The yield of XIII was increased when the reaction time was cut to 4 hrs.

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 1954:14736 Document No. 48:14736 Original Reference No. 48:2699d-i,2700a-i,2701a-b Some isoflavones derived from genistein. Whalley, W. B. (Univ. Liverpool, UK). J. Am. Chem. Soc., 75, 1059-65 (Unavailable) 1953. CODEN: JACSAT. ISSN: 0002-7863.

AB 4',5,7-Trihydroxy-8-methylisoflavone (I) was prepared by several similar by confirmatory methods. The 2,4-dihydroxy-6-methoxy-3-methylphenyl p-methoxybenzyl ketone (II) prepared from an authentic specimen of 4,2,6-MeO(HO)2C₆H₂Me (III) (obtained by 2 alternative methods) and p-MeOC₆H₄CH₂CN (IV) and 7-hydroxy-4',5-dimethoxy-8-methylisoflavone (V) (obtained by the cyclization of II with Na and HCO₂Me) differed from the compds. prepared by Shriner and Hull (C.A. 39, 4074.7) and assigned structures II and V. The so-called methylgenistein isolated from soybeans and assigned structure I by Okano and Beppu (C.A. 34, 429) has consequently a different structure. Similarly, the synthesis of 2',5,7-trimethoxy-8-methylisoflavone (VI) indicates that a 2nd compound isolated from soybeans and termed methylisogenistein is also incorrectly formulated. The preparation of several isoflavones closely allied to genistein is described, together with the synthesis of genistein 4',5-di-Me ether, and an unequivocal proof for the formulation of the C-methylation product of genistein as 5-hydroxy-4',7-dimethoxy-6-methylisoflavone (VII) is reported. 2,4,6-HO(MeO)2C₆H₂Me, m. 67°, (2.5 g.) and 3 g. IV in 75 cc. Et₂O containing 1.5 g. anhydrous ZnCl₂ were saturated at 0° with dry HCl, let stand 3 days, the viscous oily red layer washed with Et₂O, heated 20 min. with 50 cc. H₂O on the steam bath, and the resulting crystalline solid recrystd. from MeOH and EtOH to yield 1.8 g. 3,2,4,6-Me(HO)(MeO)2C₆HCOCH₂C₆H₄OMe-p (VIII), almost colorless slender needles, m. 116°, giving an intense red-brown FeCl₃ reaction in EtOH; concentration of the alc. mother liquor gave a compound which appeared to be the isomeric 3,4,2,6-Me(HO)(MeO)2C₆HCOCH₂C₆H₄OMe-p. To 1.5 g. powdered Na was added at -10° 1.5 g. VIII in 40 cc. HCO₂Me, and the mixture let stand 24 hrs. at -5° and 2 days at room temperature, decomposed with ice water, and extracted with Et₂O to give 100 mg. VIII; the aqueous solution acidified and extracted with Et₂O, the extract evaporated, the residual almost colorless oil refluxed 25 min. with 5 cc. AcOH, and the mixture diluted with 100 cc. H₂O yielded 1.19 g. 4',5,7-trimethoxy-8-methylisoflavone (IX), squat, stout, colorless tablets, m. 180° (from EtOAc), insol. in 2N aqueous NaOH. 2,4,6-(HO)3C₆H₂Me (IXA), m. 215°, (6 g.) and 5 g. IV gave similarly 2.5 g. 3,2,4,6-Me(HO)3C₆HCOCH₂C₆H₄OMe-p (X), almost colorless slender

needles, m. 228°, giving an intense green-brown FeCl₃ reaction in EtOH and subliming at 160°/0.1 mm. to give very pale yellow needles. X (2 g.) refluxed 3 hrs. with 7 g. K₂CO₃ and 2 g. Me₂SO₄ in 75 cc. Me₂CO gave 1.5 g. VIII, colorless slender needles, m. 116° (from MeOH), which was cyclized to IX. Similar condensation of 3 g. III, m. 124°, and 2.5 g. IV yielded 1.7 g. 3,2,4,6-Me(HO)₂(MeO)C₆HCOCH₂C₆H₄OMe-p (XI), slender colorless needles, m. 162°, giving an intense violet-brown FeCl₃ reaction in EtOH. XI methylated with MeI-K₂CO₃ gave VIII. XI (1.6 g.) in 30 cc. HCO₂Me added slowly to 0.8 g. powdered Na and the mixture let stand 24 hrs. at 0° and 2 days at room temperature gave 0.5 g. V, colorless, glistening, stout prisms, m. 298° (decomposition) (from EtOH), sparingly soluble in MeOH and EtOH, very sparingly soluble in EtOAc, readily soluble in 2N NaOH, and giving no

color

with alc. FeCl₃. V (100 mg.) refluxed 8 hrs. with 1 g. K₂CO₃ and 1 g. Me₂SO₄ in 50 cc. Me₂CO gave 100 mg. IX. 6,2,4-MeO(HO)₂C₆H₂Me, m. 119°, (0.75 g.) condensed with 1 g. IV yielded 0.6 g. 3,2,6,4-Me(HO)₂(MeO)C₆HCOCH₂C₆H₄OMe-p (XII), shimmering pale yellow plates, m. 192° (from aqueous MeOH), giving an intense **olive** -green color with alc. FeCl₃. XII methylated with Me₂SO₄ and K₂CO₃ in Me₂CO gave 100% quant. VIII. 4,2,6-MeO(HO)₂C₆H₂Me (XIII) (1.5 g.) condensed with 1.5 g. p-HOC₆H₄CH₂CN gave 1.4 g. 3,2,4,6-Me(HO)₂(MeO)C₆HCH₂C₆H₄OH-p (XIV), slender pale yellow needles, m. 207° (from aqueous MeOH), giving an intense violet-brown color with alc. FeCl₃. XIV methylated with Me₂SO₄ and K₂CO₃ in Me₂CO gave VIII. To 1.3 g. powdered Na was added 1 g. XIV in 40 cc. HCO₂Me, and the mixture let stand 24 hrs. at 0° and 8 hrs. at room temperature to yield 0.3 g. 4',7-dihydroxy-5-methoxy-8-methylisoflavone (XV), very pale yellow prisms, m. 304° (decomposition) (from aqueous AcOH), readily soluble in 2N NaOH, and giving no color with alc. FeCl₃. XV methylated with Me₂SO₄ in Me₂CO gave 100% IX. IX (1 g.) refluxed 5 hrs. with 10 cc. HI (d. 1.7) and the mixture diluted with H₂O gave almost 100% I, pale yellow prisms, m. 252° (decomposition), giving an intense green color with alc. FeCl₃. I methylated with Me₂SO₄ in Me₂CO gave 100% IX. Demethylation of XV similarly gave I. I (0.5 g.) refluxed 2.5 hrs. with 5 cc. Ac₂O containing 1 g. fused NaOAc gave 0.5 g. tri-Ac derivative of I, colorless slender needles, m. 218°, insol. in 2N NaOH, sparingly soluble in MeOH and EtOH, and giving no color with alc. FeCl₃. 2,4,6-HO(MeO)₂C₆H₂Me m. 68°, (3.5 g.) condensed in the usual way with o-MeOC₆H₄CH₂CN (XVI) gave 2.5 g. o-MeO isomer (XVII) of VIII, colorless, shimmering flat prisms, m. 148°, giving an intense red-brown color with alc. FeCl₃. XVII (1.5 g.) cyclized in the usual manner yielded 1.5 g. 2,3-dihydro-2-hydroxy-4',5,7-trimethoxy-8-methylisoflavone (XVIII), colorless needles, m. 186° (decomposition) (from EtOAc), insol. in 2N NaOH, readily soluble in EtOAc, giving no FeCl₃ reaction, and decomposing on attempted sublimation at 0.001 mm. to a **phenolic** substance showing a strong FeCl₃ reaction. XVIII (0.5 g.) refluxed 0.5 hr. with 5 cc. AcOH, and the mixture diluted with H₂O gave 0.45 g. VI, stout flat colorless prisms, m. 185° (from EtOAc), sublimed unchanged at 200°/0.01 mm., insol. in 2N NaOH, and giving no FeCl₃ reaction. IXA (6 g.) condensed with 4 g. XVI gave 3.5 g. o-MeO isomer (XIX) of X, almost colorless, stout prisms, m. 206°, unchanged by sublimation at 160°/0.01 mm., and giving an intense violet-brown color with alc. FeCl₃. XIX (2.5 g.) refluxed 3 hrs. with 8 g. K₂CO₃ and 2.5 g. Me₂SO₄ in 75 cc. Me₂CO gave 1.8 g. XVII. XIII (3.2 g.) with 2.8 g. XVI gave 1.8 g. o-MeO isomer (XX) of XI, pale yellow silky needles, m. 195°, giving an intense violet-brown color with alc. FeCl₃. XX methylated in the usual manner gave 100% XVII. XX (1.7 g.) in 50 cc. HCO₂Me added to 0.9 g. Na at 0° and the mixture let stand 24 hrs. at 0° and 48 hrs. at room temperature gave 0.4 g. 7-hydroxy-2',5-dimethoxy-8-methylisoflavone, colorless silky needles, m. 314° (decomposition) (from aqueous AcOH), almost insol. in MeOH and EtOH, sparingly soluble in EtOAc and Me₂CO, readily soluble in cold 2N NaOH. 1,3,5-C₆H₃(OH)₃ (5 g.) with 6 g. XVI

yielded 4 g. 2,4,6-(HO)3C6H2COCH2C6H4OMe-o (XXI), pale fawn-colored needles, m. 169° (from aqueous MeOH), readily soluble in EtOH and Me2CO, and giving an intense red-brown color with alc. FeCl3. XXI (2.5 g.) refluxed 3.5 hrs. with 7 g. K2CO3 and 2.5 g. Me2SO4 in 100 cc. Me2CO gave 1.6 g. 4,6-diMe ether (XXII) of XXI, rosettes of stout colorless prisms, m. 122° (from aqueous MeOH), and giving an intense red-brown FeCl3 reaction in EtOH. XXII (1.5 g.) in 50 cc. HCO2Me cyclized with 1 g. Na dust yielded 1.3 g. 2,3-dihydro-2-hydroxy-2',5,7-trimethoxyisoflavone (XXIII), rosettes of colorless needles, m. 196° (decomposition) (from EtOAc), insol. in cold 2N NaOH, and decomposing on attempted vacuum sublimation. XXIII (1 g.) in 7 cc. AcOH refluxed 0.5 hr., and the mixture diluted with H2O gave 0.9 g. 2',5,7-trimethoxyisoflavone (XXIV), colorless massive rectangular prisms, m. 140° (from EtOAc), sublimed unchanged at 200°/0.01 mm., insol. in cold 2N NaOH. 3,5-(HO)2C6H3OMe (2.5 g.) and 2.5 g. XVI condensed in the usual manner gave 1.5 g. 6,2,4-MeO(HO)2C6H2COCH2C6H4OMe-O (XXV), slender colorless needles, m. 129-30° (from aqueous MeOH or aqueous AcOH), and giving an intense red-brown color with alc. FeCl3. XXV (1.4 g.) cyclized with 25 cc. HCO2Me and 0.5 g. Na dust, the resulting product isolated with CHCl3, and refluxed 10 min. with 10 cc. AcOH, and the mixture diluted with H2O gave 0.5 g. 7-hydroxy-4',5-dimethoxyisoflavone (genistein 4',5-di-Me ether) (XXVI), pale fawn-colored prisms, m. 294-5° (decomposition) (from MeOH), readily soluble in cold 2N NaOH. XXVI refluxed 3 hrs. with HI (d. 1.7) was almost quantitatively demethylated to genistein (XXVII), m. 296-8°. XXVII methylated by the method of Baker and Robinson gave VII. VII (1 g.) refluxed 3 hrs. with 25 cc. HI (d. 1.7) yielded 0.7 g. 4',5,7-trihydroxy-6-methylisoflavone (XXVIII), very pale yellow needles, m. 274° (from aqueous MeOH), unchanged by sublimation at 150°/0.01 mm., and giving an intense green color with alc. FeCl3. XXVIII remethylated in boiling Me2CO with Me2SO4 gave almost 100% VII. The ultraviolet absorption spectra are recorded for VI, XVIII, XXIII, and XXIV.

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1950:35811 Document No. 44:35811 Original Reference No. 44:6845h-i,6846a-d Preparation and some properties of perinaphthene. Boekelheide, V.; Larrabee, Clifford E. (Univ. of Rochester, Rochester, NY). J. Am. Chem. Soc., 72, 1245-9 (Unavailable) 1950. CODEN: JACSAT. ISSN: 0002-7863.

AB 7-Perinaphthanone (I) (60 g.) in 400 ml. ether, slowly added to 200 ml. 5 M LiAlH4 in ether, stirred 10 min., and decomposed with H2O and dilute HCl, gives 92% 7-perinaphthanol (II), m. 85°; 2 g. II in 10 ml. absolute EtOH, treated with 10 ml. absolute EtOH saturated with HCl and boiled 15 min., gives 65-85% perinaphthene (III) [picrate, brick-red, m. 205-7° (decomposition); trinitrobenzene complex, orange, m. 159° (decomposition)]. I (5 g.) and excess 5 M LiAlH4 in boiling ether evolve 1 mol. H and give 14% III, 65% I, and 12% phenolic material. III is unstable in contact with air and becomes completely black in 1-2 days. III is quantitatively reduced to perinaphthane (IV), m. 65°. Absorption maximum of III at 348, 320, and 234 mμ (log ε 3.7, 3.9, and 4.4); of IV at 289 and 228 mμ (log ε 3.7 and 4.7). Air oxidation of III gives a poor yield of I; Na2Cr2O7 in AcOH (heated 2 hrs. on the steam bath) gives 83% I. III (300 mg.), 0.3 g. BzH, 0.5 ml. 10% NaOH, 300 ml. ether, and 10 ml. EtOH, kept 1 week at room temperature in a N atmospheric, give 33% of an amorphous orange solid, C20H14, m. 190°. III (1.85 g.) in 25 ml. ether, treated with 15 ml. 1.33 M PhLi and then (dropwise) with 5 g. MeI in 25 ml. ether, gives 82% 1(or 6)-methylperinaphthene, m. 60-2°. III (0.76 g.) in 25 ml. CCl4 in a CO2-Me2CO bath, treated dropwise with 0.7 g. Br in 10 ml. CCl4, gives 45% 7,8-dibromoperinaphthan, m. 102-4°; it loses HBr on standing; attempted dehydrobromination in AcOH or C5H5N did not give a definite product. III and (CH2CO)2NBr give a deep blue-green solution but no useful product. III is definitely more acidic than Ph3CH and less acidic than cyclopentadiene. III and Ph3C

give a fluorescent **olive**-green solution, from which a good yield of Ph₃CH can be isolated. The concept that the symmetry of the perinaphthényl nucleus makes possible a high degree of resonance stabilization has been used to explain certain results in this series, including the reaction of I with LiAlH₄. III resembles fluorene, indene, and cyclopentadiene in many respects.

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1942:19153 Document No. 36:19153 Original Reference No. 36:2954a-i,2955a-d American Society for Testing Materials, Standards, 1941 Supplement. III. Nonmetallic materials, general. 639 pp. (Unavailable).

AB Standards adopted or revised in 1941 are given for test for dustiness index of coal and coke; test for Conradson C residue of petroleum products; tests for distillation of crude petroleum, of gas oil and similar distillate fuel oils, and of plant-spray oils; test for vapor pressure of petroleum products; calcn. of viscosity index; testing of varnishes used for elec. insulation; test for Me₂CO extraction of **phenolic** molded or laminated products; measuring of shrinkage from mold dimensions of molded materials used for elec. insulation; test for arc resistance of **solid** elec. insulating materials; sample preparation for phys. testing of rubber products; tension testing of vulcanized rubber; accelerated aging of vulcanized rubber by the O-pressure method and by the oven method; air-pressure heat test of vulcanized rubber; test for indentation of rubber by means of the Pusey and Jones plastometer; testing of flat rubber belting; insulated wire and cable, class AO, 30% Hevea rubber compound (including emergency alternate provision); insulated wire and cable, heat-resisting rubber compound and performance rubber compound; testing rubber-insulated wire and cable; textile-testing machines; test for fastness to light of colored textiles; definitions of terms relating to textile materials; specifications and tests for asbestos roving and tape for elec. purposes; test for fastness to laundering of dyed or printed cotton textiles; tests and tolerances for tubular sleeving and braids, for cotton yarns, and for single jute yarn; specifications and tests for fineness of wool tops; test for machine direction of paper; test for resin in paper; test for bulking thickness of paper; test for water-soluble acidity or alkalinity of paper; pure and blended palm-oil **solid** soap; powdered built soap; alkaline soap powder; sampling and chem. analysis of soaps and soap products; Na metasilicate and sesquisilicate; chem. analysis of sulfonated and sulfated oils; sampling plant or confined waters for ind. uses; determination of hydroxide ion in ind. waters; and reporting results of analysis of ind. waters. Tentative standards issued or revised in 1941 are given for aviation gasolines; tests for Ramsbottom C residue and for aniline point of petroleum products; tests for carbonizable substances in paraffin wax and in white mineral oil; test for gum stability of gasoline; test for ignition quality of Diesel fuels; tests for knock characteristics of motor and aviation fuels; tests for neutralization number of petroleum products and lubricants; test for saponification number; test for S in petroleum oils

by lamp method; test for PbEt₄ in gasoline; molds for test specimens of molding materials used for elec. insulation; preconditioning of plastics and elec. insulating materials for testing; testing of molded materials used for elec. insulation; tests for compressive strength, flexural strength and tensile strength of elec. insulating materials; test for distortion under heat of molded elec. insulating materials; tests for impact resistance of plastics and elec. insulating materials; round **phenolic** laminated tubing for radio applications; test for volatile-matter content of vulcanized fiber; tests for product uniformity and punching quality of **phenolic** laminated sheets; tests for thickness of **solid** elec. insulation; testing of glass spool insulators; tests for power factor and dielec. constant of elec. insulating materials; sampling and testing untreated paper used in elec. insulation; measuring mica stampings used in electronic devices and incandescent lamps; tests of plastics for color fastness to light, diffusion of light,

deformation under load at elevated temps., flammability and resistance to chem. reagents; test for measuring flow temps. of thermoplastic molding material; test for surface irregularities of flat transparent plastic sheet; tension testing of plastics; chem. analysis of rubber products; tests for tear resistance and compression fatigue of vulcanized rubber; testing of automotive air-brake and vacuum-brake hose; sampling and testing of rubber latex; testing of sponge-rubber products; testing of asphalt composition battery containers; fire-retardant properties of treated textile fabrics; identification of fibers in textiles; quant. analysis of textiles; test for resistance to insect pests of textile fabrics and yarns; evaluating compds. designed to increase the resistance of fabrics and yarns to insect pests; testing of asbestos tubular sleeving; bleached cotton broadcloth; medium-weight cotton corduroy; tests and tolerances for woven glass fabrics and tapes; test for com. weight of continuous-filament and spun rayon yarns and threads; testing of staple rayon; test for hard-scoured wool in wool in the grease; conditioning of paperboard, fiberboard, and paperboard containers for testing; compression testing of corrugated and **solid** fiber boxes; tests for folding endurance and moisture of paper; tests for thickness and for basis weight of paper and paper products; **olive** oil **solid** and chip soap; palm oil chip soap; test for carbonates as CO₂ in soaps and soap products; sampling and chem. analysis of special detergents; definitions of terms relating to soaps and other detergents; and thermometers. Tentative revisions of standards are submitted for laboratory sampling and analysis of coal and coke; testing shellac sheet and plate materials and laminated tubes and rods used in elec. insulation; testing elec. insulating oils and elec. porcelain; test for accelerated aging of vulcanized rubber by the O-pressure method; textile-testing machines; specifications and methods of test for fineness of wool tops; testing and tolerances for cotton yarns and threads and for tire cord; testing pile floor covering; definitions of terms relating to textile materials; sampling and chem. analysis of soaps and soap products and of special detergents; and thermometers.

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1941:16337 Document No. 35:16337 Original Reference No. 35:2631i,2632a-i,2633a American Society for Testing Materials, Standards, 1940 Supplement. III. Nonmetallic materials, general. 574 pp. (Unavailable).

AB Standards issued or revised in 1940 are given for methods of sampling coal for analysis and of laboratory sampling and analysis of coal and coke; Stoddard solvent; tests for distillation of gasoline, naphtha, kerosene and similar petroleum products; test for flash point by means of the Pensky-Martens closed tester; method of analysis of grease; tests for knock characteristics of motor fuels; test for precipitation number of lubricating

oils;

test for unsulfonated residue of plant-spray oils; test for water in petroleum products and other bituminous materials; test for water and sediment in petroleum products by means of centrifuge; testing of shellac used for elec. insulation; testing of elec. insulating oils; tests for conducting paths in elec. slate; tests for accelerated aging of vulcanized rubber by the O-pressure method, and by the oven method; air pressure heat test of vulcanized rubber; tests for abrasion resistance of rubber compds.; dynamic tests for ply separation and cracking of rubber products; rubber gloves for elec. workers; textile-testing machines; definitions of terms relating to textile materials; specifications and tests for cotton goods for rubber and pyroxylin coating; terry toweling; tests and tolerances for cotton yarns and for hose and belt ducks; tests and tolerances for continuous-filament rayon yarns; test for fiber length of wool; testing of pile floor covering; and testing of wool felt. Tentative standards issued or revised in 1940 are given for sampling coals classed according to ash content; gasoline; test for C residue of petroleum products; test for carbonizable substances in white mineral oil; test for distillation of plant-spray oils; test for dropping point of lubricating

grease;

test for gum stability of gasoline; test for vapor pressure of petroleum products; calcn. of viscosity index; flexible varnished tubing used in elec. insulation; **phenolic** laminated sheet for radio applications; testing of flexible varnished tubing used for elec. insulation; testing of **solid** filling and treating compds. used for elec. insulation; tests for dielec. strength of elec. insulating materials; sampling and testing of untreated paper used in elec. insulation; test for flammability of plastics; test for flow temps. of thermoplastic molding materials; test for n of transparent organic plastics; test for water absorption of plastics; method of chem. analysis of rubber products; tension testing of vulcanized rubber; test for changes in properties of rubber and rubber-like materials in liquids; tests for compression set, compression-deflection characteristics and phys. state of cure of vulcanized rubber; testing of rubber hose, automotive hydraulic brake hose and flat rubber belting; insulated wire and cable of rubber or rubber compound; testing of rubber-insulated wire and cable; tests of textile fabrics and yarns for resistance to moths and of textile fabrics for resistance to water; definitions of terms relating to textile materials; asbestos yarns; testing of asbestos cloth and yarns; cotton and (or) wool blanketing; bleached wide cotton sheeting; test for apparent fluidity of dispersions of cellulose fibers in cuprammonium hydroxide; testing cotton fibers; tests and tolerances for glass yarn and for woven glass fabrics, tapes and tubular sleeving and braids; specifications and tests for fineness of wool tops; test for shrinkage of grease wool; methods of sampling paper and paper products; test for ash content of paper and paper products; qual. test for casein in paper; tests for α -, β - and γ -cellulose in paper; test for opacity of paper and paper products; test for paraffin content of waxed paper; test for starch in paper; **olive-oil** and **palm-oil solid** soaps; salt-water soap; Na sesquisilicate; tetrasodium pyrophosphate; methods of sampling and chem. analysis of special detergents ($\text{Na}_3\text{PO}_4 \cdot 12\text{H}_2\text{O}$, $\text{Na}_2\text{SiO}_3 \cdot 5\text{H}_2\text{O}$, $3\text{Na}_2\text{O} \cdot 2\text{SiO}_2 \cdot 11\text{H}_2\text{O}$ and CO_2 in caustic soda); definitions of terms relating to soaps and other detergents; sampling plant or confined waters for industrial use; determination of Ca, Mg, Cl and

SO4

ions in industrial waters; determination of total orthophosphate and calcn. of the resp. orthophosphate ions in industrial waters; method of reporting results of analysis of industrial waters; A. S. T. M. thermometers; designation of numerical requirements in standards; and definitions of terms relating to rheological properties of matter. Tentative revisions (submitted in 1940) of standards are given for laboratory sampling and analysis of coal and coke; testing elec. insulating oils; test for accelerated aging of vulcanized rubber by the oxygen-pressure method; textile-testing machines; testing and tolerances for cotton yarns; and definition of terms relating to textile materials.

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1922:24445 Document No. 16:24445 Original Reference No. 16:4158e-i A new color reaction for phenols based upon the use of selenious acid. Levine, Victor E. Science, 52, 207 (Unavailable) 1920.

AB Phenols in contact with a solution of 0.5% SeO_2 or 0.75% Na selenite in concentrated H_2SO_4 give rise to a pale green, **olive-green**, emerald-green, blue-green or purplish blue color. Often several colors are observed simultaneously. On standing, on heating or on the addition of water the characteristic color or play of colors disappears, giving way to a dark brown, reddish brown or brick-red. The reaction is of great sensitivity and wide applicability. The following types of phenols respond to the test: Mono-, di- and tri-phenols, **phenolic** ethers, aldehydes, alcs. and acids, glucosides yielding phenols on hydrolysis, dyes and alkaloids possessing **phenolic** groups. Nitrating the phenol abolishes the reaction, for o-nitrophenol, p-nitrophenol, di- and trinitro-phenol yield negative results. **Phenolic** aldehydes and acids give extremely faint reactions. The

following compds. tested prove the general value of the reaction: phenol, amidol, anisole, phenetole, phenacetin, the cresols, salicylaldehyde, salicylic acid, acetylsalicylic acid, methyl and phenyl salicylates; pyrocatechol, guaiacol, vanillin, vanillic acid, piperonal, resorcinol, quinol, pyrogallol, phloroglucinol; eugenol, thymol, carvacrol, α - and β -naphthol, chrysarobin; the glucosides, arbutin, phlorhizin; the opium alkaloids, morphine, heroine, dionine, narcotine, narceine, papaverine; the dyes, orcein, alizarin, purpurin. The reaction proves very useful in detecting phenols in **solid** or liquid state.

Phenols dissolved in water or in an organic solvent should first be evaporated in

a porcelain crucible and the test made on the dry residue. A beautiful ring test may be obtained by the addition of a CHCl_3 or amyl alc. solution of the phenol to the Se reagent. A bright emerald-green is observed at the point of junction of the two liquids. The green compound remains with the H_2SO_4 and does not dissolve in the organic liquid. The course of the reaction may be explained on the ground that the phenol decomposes the selenious acid with the formation of free Se. This dissolves with a green color in concentrated H_2SO_4 to form selenosulfur trioxide.

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